An application of the Triarchic Theory of Intelligence to students of English in a Taiwanese university: Reflections of an action researcher

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An application of the Triarchic Theory of Intelligence to students of English in a Taiwanese university: Reflections of an action researcher

by

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Declaration

I declare that this thesis, which I submit for the degree of Doctor in Education at Durham University, is my own work. It is not the same as any other work which has previously been submitted for a degree in any other institutes or universities.

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Blessed are those who hunger and thirst for righteousness, for they shall be satisfied.

(The Bible, New American Standard Version, Mathew 5: 6)

饑渴慕義的人有福了 因為他們必得飽足

(聖經,合和本 *Chinese Union Version*, 馬太福音 第五章第六節)

朝聞道 夕死可以

(孔子語錄 里仁 第四篇)

A person who obtains the logos in the morning will remain contented, if he/she dies in the evening of the same day.

(Analects of Confucius, No. 4, Kindness of a Community. Translated by Catherine Lou)

I came, I saw, I learnt.

(Catherine, Lou Wen-zhu, also Lo Wen-chu, **羅文珠***)*

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Abstract

In order to acquire knowledge from my teaching and students' learning experiences, I have attempted to apply the Triarchic Theory of Intelligence (i.e. analytical, creative and practical intelligence) to teaching English at a Taiwanese university. This study adopted the action research approach and was developed in three stages. Each stage lasted one semester. At the end of stage two, the lesson planning for practical intelligence was found to be difficult to develop. Therefore, the research questions were changed into comparing the experiences between the analytical and creative groups, which received the analytical and creative teaching approaches, respectively. According to the multiple data sources (i.e. students' reflection papers, interviews, diary writing, testing, etc.), the major findings included:

- The discrepancy in applying both analytical and creative teaching approaches from the above theory to teaching Chinese students;
- Both the potential of using the creative teaching approach in creative writing during the lessons and the strength of the analytical teaching approach in essay-writing near the end of the intervention to enhance the students' learning motivation;
- The analytical group's advantage of having self-study time in reducing the learning pressure arising from poor time management, and in facilitating better performances in learning attitudes, relevant disciplines and academic performance, including the language test. The creative group's disadvantages of having no self-study time but having additional learning through creative writing, as a possible distraction from the novel, creative teaching approach.
- The students' changed perspectives on English writing in both analytical and creative groups from the negative to the positive;
- A few students' disinclination to engage intellectually, possibly due to the influence of the rote learning experienced during their secondary English education;
- The students' changed perspective on learning English in Taiwan from both teaching approaches, the possibility of creative teaching approach to establish the students' clearer awareness of the importance of the learning methods and the possibility of employing analytical teaching approach to identify with greater clarity the relevant intellectual development.

Along with these, the importance of: (1) classroom management, (2) the students' time management, (3) workload considerations and (4) development in stages, and also the methodological changes via the self-inquiry process of the action research approach were also found to be prominent in this study.

Keywords: Action research, higher education, learning English as a foreign language, essay-writing, creative writing, problem-solving, analytical thinking, creative thinking, the Triarchic Theory of Intelligence.

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Chapter 1 INTRODUCTION

The purpose of this chapter is to introduce the aim of this study and state the research questions. With the contextual knowledge of English education[1] in Taiwan, these will be more sensibly understood. The organisation of this thesis, which describes the logical sequence of the entire study, is set out at the end of this chapter.

1.1 AIM OF THIS STUDY

The aim of this study is to examine the application of the Triarchic Theory of Intelligence (i.e. analytical, creative and practical intelligence, Sternberg, 1985) in teaching English at a Taiwanese university. By adopting a teacher's perspective in this study, the insights into change by applying this theory may be explored. These insights might be helpful in providing a firmly rooted learning outcome for higher English education in the Taiwanese context. It is the quality of the change (rather than the number of times of change) in ***a*** classroom that might demonstrate the possibility of achieving the above outcome. Fundamentally, a teacher as an agent of change in ***a*** classroom should and will be the key.

1.2 TAIWANESE SCENARIO OF ENGLISH EDUCATION

The present study focuses on how to establish adequate English higher education after national testing.[2] The following sections discuss the students' learning and teachers' practice in English education.

1.2.1 Entering into English education

Prior to higher education, the main strategies of Taiwanese school pupils for learning English are memorisation (Editor Department of Science Monthly, 1984) and the

[1] English education in this thesis refers to English language education. The aspect of English culture is ignored for the convenience of discussion.

[2] Since 1954, a nation-wide standardised test was undertaken in order to select students for higher education in all Taiwanese universities and colleges. In 2002, a new policy of multiple enrolments was adopted (Zhang and Zhang, 2001). Sixty percent of students in each university and college were selected based on this national testing. Each university and college has a right to select the other 40 percent of students with their own schemes, which may include testing or other types of assessment.

drilling of test skills (Shao and Ying, 2006). Affected by the backwash[3] from national testing in order to enter higher education, students have suffered reduced motivation to learn English. Low motivation is generally expected prior to (Wang, 2005; Zeng, 2005) and extends to higher education (Wang, 2005). This indicates two facts. Firstly, throughout their journey of learning English prior to higher education, students have not been provided with sufficient opportunities to develop intrinsic motivation (i.e. reward gained from the activity itself or the feelings from the activity, Deci, 1973). Secondly, students have perceived the learning of English as a means to entering higher education as an extrinsic motivation (i.e. an instrument to achieve a valuable outcome, Teo, Lim and Lai, 1999). Without the development of intrinsic motivation and by losing the strong extrinsic motivation after national testing, the motivation for students to learn English in higher education is typically low.

Despite the enormous educational resources available for equipping students to make progress in national testing, an issue regarding their English proficiency is emerging. The average scores from the TOEIC (Test of English for International Communication) in Taiwan from 2004 to 2006 have been continually decreasing and lower than those in China, the Philippines and Korea (Su and Jiang, 2007). Also, TOEFL (Test of English as a Foreign Language) resulted in Taiwan coming in the bottom six of Asian countries over three years (Zhang, 2005). Compared with other countries in Asia, there has been a continual decrease in overall English proficiency in Taiwan. The decreasing English proficiency every year at both the undergraduate and postgraduate levels seems to be recognised by English teachers (Li, 2002). This fact is also recognised by some freshmen (the post-interview in stage two of this study). Taiwanese students' English proficiency appears to peak only before national testing (Zeng, 2009).

Rote learning has been encouraged and reinforced by the national testing and intellectual development has not a focus in English education. Taiwanese students' unfamiliarity with intellectual development, low motivation and unsatisfactory English proficiency suggest that there is a difficulty in teaching English in higher education.

1.2.2 Professional practice of English teachers

It is easy to blame English teachers for the above inadequacy of English education and

[3] Backwash is 'the effect of testing on teaching and learning' (Hughes, 1989, p.1). Backwash is also defined as 'how assessment instruments affect educational practices and belief' (Cohen, 1994, p.41).

lay the responsibility for solving the problems on them. In order to examine the nature of the professional practice of English teachers in Taiwan, three aspects at the primary/secondary level and their development in higher education are discussed.

(i) Historical context;
(ii) Educational system;
(iii) Contemporary context of globalisation; and
(iv) Development in higher education.

(i) Historical context

As a foreign language environment,[4] the teaching and learning experiences in Taiwan were insufficient to develop a Taiwanese perspective at the early stages of English education. Similar to the Taiwanese experience of the multiple foreign influences of colonisation (Yang, 1997), teaching English has historically been influenced by various forces outside the classroom. The following major approaches[5] to teaching English in Taiwan are briefly described:

- Grammar translation approach;
- Audio-lingual approach;
- Total physical response (TPR);
- Total immersion approach;
- Communicative language approach; and
- Multiple intelligence (Gardner, 1984) approach.

The teaching of English was probably introduced in 1904 (Wu, 2004). The grammar translation approach (Wikipedia, 2009) emphasises explanations in the native language and memorisation of vocabulary and grammar rules. As the approach adopted in English education in China (Wang and Fan, 1999), this approach may have been adopted in Taiwan because English education in both places was at approximately the same stage at that time and was introduced by Christian missionaries.

[4] In a foreign language environment, English is not an official or daily used language. The linguistic and cultural input of learning is often insufficient in this environment. This is a contrast to the second language environment in which English is the official or daily used language, but is not the first language of the learners.

[5] Other approaches, such as the direct method, silent way, etc. are not examined because they do not play an influential role in contemporary English education in Taiwan.

The audio-lingual method (Wikipedia, 2009) aims to communicate a foreign language efficiently through structured sentence drills. This approach became widely adopted in Taiwan because of the American military influence after World War II. Almost all secondary English textbooks consist of sentence drills as a major pattern of conversation practice (Zhong, 2007). This approach has also recently become one of the two most popular approaches to teaching English in primary schools (Kim, 2000).

The total physical response approach (TPR, Wikipedia, 2009) requires students to give physical responses after receiving a teacher's language input. This approach attracted young pupils in its game-like activities (Lan, n.d.). The total immersion approach encourages the use of English as the instructional language (Gagnon, 1999) in order to create a language environment within the classroom. It was preferred by students who are eager to learn English quickly and have a high expectation of reaching a good standard. These two approaches were promoted particularly by commercial organisations in English Education.

The aim of the communicative language teaching (Wikipedia, 2009) is situational communication. This approach is the only approach proposed in the Guidelines of Grade 1-9 Curriculum of English educational reform (Ministry of Education of the Republic of China, 2008).

Gardner (1984) proposed Multiple Intelligence (M. I.) Theory. This theory emphasises the development of students' strengths in linguistic, logic-mathematic, spatial, musical, bodily-kinesthetic, interpersonal and intrapersonal areas. With support from educational theorists (Dai, 2003), this approach has become the most recent trend in teaching English. According to the Electronic Theses and Dissertations System[6] (National Central Library of the Republic of China, 2005), up to April 2009, there were 25 studies on applying this theory. This indicates the popularity of studying and adopting this theory in the Taiwanese context. No other approach to teaching English has gained such popularity.

[6] The Electronic Theses and Dissertations System in the National Central Library in Taiwan collected almost all the master theses and doctoral dissertations completed as part of Taiwanese post-graduate programmes since 1956. Almost all of these studies were based on data in the Taiwanese context. It is currently searched more than 100,000 times every month. Most of these studies are unpublished in English academic sources and the quality of these studies varies. This database is a basic source and provides an understanding of academic studies from the local research perspective in the Taiwanese context.

The above influence of missionary activities, the military, commercial and governmental organisations, and educational theorists do not guarantee successful learning and teaching in English education.

The grammar translation approach echoes the backwash from national testing and facilitates rote learning (Shi, Lin, Huang and Ye, 2000). After being taught in the audio-lingual approach, most students still have encountered difficulty in using their oral English (Wu, 2007). The TPR approach introduced a danger of losing focus on learning language at the expense of providing opportunities for non-verbal expressions. The total immersion approach has been a controversial issue in Taiwan. It influences the learning of the mother tongue (Zhan, 2005) and establishing the cultural identity (Lu and Chen, 2006). Since English is not the language which Taiwanese people use in their daily life, the communicative language approach is unnecessary from the perspective of the public (Fan, 2005). Also, secondary English teachers have articulated difficulties with regard to the insufficient teaching resources for creating purposeful communication in this approach (Zhang, L.-Y., 2001).

Without sufficient English teachers' reflections, an estimation of the appropriateness of these teaching approaches has often been lacking. A fundamental function of learning a language is as an intellectual exercise. This aspect has not seemed to be emphasised in applying the above teaching approaches.

In contrast, the multiple intelligence approach (Gardner, 1984) emphasises intellectual development. The following English lesson applied this approach teaching the theme from a reading passage, *Our Rivers Are Polluted*, in an English lesson:

> Linguistic:
> Use 5-10 sentences to describe the natural environment in your hometown.
>
> Logic-mathematic:
> Organise the following events in sequence: (1) there is less natural land left, (2) people want to make money, (3) trees are cut down and more factories are built, and (4) we will have no place to live.

> Spatial:
> Imagine how your hometown will be and draw it out.
>
> Musical:
> Sing 'Heal the World' with your group to a teacher and let him/her grade you.
>
> Bodily-kinesthetic:
> Act out at least five actions to protect the earth with your group, and let the class guess them.
>
> Interpersonal:
> Make up a dialogue about your way to save nature with your partner.
>
> Intrapersonal:
> Do a 'How Green are You?' questionnaire and sign a pledge to save nature more. (Lin, n.d. pp.8-9)

However, similar to adopting the other teaching approaches mentioned, the popularity of this approach in the Taiwanese context lacks sufficient reflections from English teachers and is problematic (see 1.3 Statement of research problem).

(ii) Educational system

The Taiwanese educational system has shaped its English education under the prevailing influence of national testing (Zhang, Y.-P., 2004). Taiwanese schooling has become a mechanism to gain high scores in national testing (Wang and Lin, 1994). The overwhelming impact of national testing is also demonstrated in teachers' perspective on student achievement:

> …Teachers may unintentionally reveal [that]…the only proof of [students'] achievement is scores...[7] (Lin, 1999)

Teaching tends to become a training programme for national testing. Under this

[7] The in-text quotation is translated by Luo, W.-Z. [羅文珠].

influence, student teachers select their learning target as classroom administration:

> Student teachers tend to learn…how to maintain the routines in a classroom…but lack the ability to…inspire students' intrinsic motivation.[8] (Zhuang, 2001)

(iii) Contemporary context of globalisation

Taiwanese English education has been tremendously affected by globalisation. By communicating in English, resources are obtained to achieve goals in economics, education and other areas. Within this context, the Taiwanese government endorses an emphasis on English education. English education has a similar problem as other subjects:

> In the last fifty years, education in Taiwan has constantly involved instrumentalism, which forces education to fulfill goals for other fields…rather than education itself.[9] (Huang, 1999)

Furthermore, the top-down approach to educational reform had excluded the teachers' perspectives. This exclusion has been a source of conflict during the last ten years or more (Taiwan Provincial Education Association, 2003; TVBS Poll Center, 2004; King Car Education Foundation, 2005; Zhou, 2006). Local English teachers in Taiwan have to seek to balance all the above forces (see (i) Historical context in 1.2.2) in this conflicting scenario. Primary and secondary teachers have been criticised for not developing their own teaching perspectives (Wang, 2003). With all of the dynamics in the above force-driven environment, it is predictable that the encouragement of English teachers to reflect on their own teaching experiences and to develop their teaching perspectives is little.

(iv) Development in higher education

The influence of national testing upon professional practices at the primary and secondary levels does not exist in higher English education. Instead, the pressure from the competition in the global economy is manifested at this level. The total immersion approach is demanded by university students (Cao, Huang and Hou, 2005), with their

[8] The in-text quotation is translated by Luo, W.-Z. [羅文珠].

[9] The in-text quotation is translated by Luo, W.-Z. [羅文珠].

expectation to be able to enter the job market after graduation. These students seemed seldom to consider that some or many of their classmates might have found difficulty in absorbing the instructional content in this approach. Such a demand has become the source of anxiety for local non-native speaking English teachers in higher education (Li, 2006).

Furthermore, the phenomenon of the lack of teachers' reflections in the field of primary and secondary English education seems to be reproduced in higher English education. The action research approach specialises in involving teachers' reflections. However, this approach is unfamiliar and rarely put into practice in higher English education. Up to April 2009, there were two relevant studies (Huang, 2006; Wang, 2007) in Electronic Theses and Dissertation System (National Central Library of the Republic of China, 2005). Two other relevant (Huang and Liu, 2005; Lin, Chen, Liao, Liu and Ye, 2005) were found in the Chinese periodicals index[10] (National Central Library of the Republic of China, 2009). These two sources have collected most studies based on data in the Taiwanese context. The above infrequent application indicates that the influence of the action research approach had not been rooted in the Taiwanese local academic community studying English higher education.

The teaching of secondary English teachers has inevitably been affected by the influence of national testing. In contrast, English teachers in higher education have no such constraint. They are comparatively more advantaged and neutral in reflecting the students' needs in learning English. Without their sufficient reflections, it is difficult to expect that higher English education within the Taiwanese context would be effective in:

- Resolving the inadequacy prior to higher education;
- Motivating students to continue learning English, and
- Rooting professionalism.

1.3 STATEMENT OF RESEARCH PROBLEM

Rote learning seems to be a major cause of low motivation and unsatisfactory English

[10] The Chinese periodicals Index is another significant source of local literature. This database provides bibliographies of publications from Taiwan and some from Hong Kong and Macao since 1970.

proficiency (see 1.2.1 Entering into English education). In contrast, the teaching approach to intellectual development may have promise to facilitate meaningful learning experiences for students to learn English. This intellectual teaching approach is possibly more applicable at the level of higher education, where the influence of national testing is expected to be resolved and facilitating students' thinking is desired. However, up to April 2009, there was only one relevant study in the Electronic Theses and Dissertation System (National Central Library of the Republic of China, 2005). No relevant study was found in the Chinese Periodicals Index (National Central Library of the Republic of China, 2009).

An English teacher's role in the Taiwanese context seems to be that of a passive receiver of teaching approaches, rather than an active professional. As mentioned above, reflections on the appropriateness of teaching approaches are often lacking. It may not be expected for foreign language learners to learn English involving high-level cognitive processes. However, without facilitating intellectual development, Taiwanese students are unlikely to have a meaningful approach to learning English. Although the M. I. (Gardner, 1984) approach emphasises the intellectual development, introducing this approach to become the newest trend in Taiwanese English education involves a lack of discernment.

Firstly, the application of this approach did not involve critical reflections by English teachers. It seems that there is almost no discussion about the time and energy involved in applying this approach. Without considering this significant aspect in English teachers' regular lessons, the support for the application of this theory in the school system is premature.

Secondly, there is a need to discuss both the positive and negative evidence about applying this approach. One of the twenty-five relevant studies concluded that this application has no influence on intrinsic motivation among primary students (Zhang, R.-F., 2001). Another study (Chen, Z.-J., 2003) supported this application but identified a negative attitude of receiving this teaching approach among students. The other twenty-three studies supported this application without adequate discussion of the weakness of applying it. Whether the Multiple Intelligence Theory (Gardner, 1984) can be proved seems to be the main interest of the majority of these studies.

Thirdly, it seems that the appropriate understanding of other intelligence theories is passive. Both Multiple Intelligence Theory (Gardner, 1984) and the Triarchic Theory of Intelligence (Sternberg, 1985) have been listed as the two most influential contemporary intelligence theories (Plucker, 2007). However, up to April 2009, in contrast to 25 studies relevant to M. I. (Gardner, 1984) theory, no study relevant to the Triarchic Theory of Intelligence (Sternberg, 1985) in Taiwanese English education was found in the two significant data sources mentioned. The discrepancy in the number of studies between these two intelligence theories seems to reveal the dominance of the adoption of the M. I. theory (Gardner, 1984). A response to redress the balance is to compare the above two compatible intelligence theories (see 2.3 Introducing the Triarchic Theory of Intelligence to Taiwanese higher English education).

The Triarchic Theory of Intelligence (Sternberg, 1985) provides empirical evidence to improve school achievement prior to higher education in U.S.A. contexts (Sternberg, Torff and Grigorenko, 1998; Grigorenko, Jarvin and Sternberg, 2002). In applying this theory, students have high intrinsic motivation to solve both creative problems (Moneta and Siu, 2002) and practical problems (Sternberg, 1999). However, it seems that there are no studies of applying this theory in higher education, specifically not within the Taiwanese context.

1.4 RESEARCH QUESTIONS

Based on the above statement, the application of the Triarchic Theory of Intelligence (Sternberg, 1985) in higher English education within the Taiwanese context seems worthy of examination through the following two research questions:

1. To what extent am I, as an English teacher, able to draw upon the Triarchic Theory of Intelligence (Sternberg, 1985) to devise meaningful learning activities?
2. How will the students respond to these learning activities?

Up to the second stage of the three stages of this study, lessons for practical intelligence were difficult to design. Therefore, in the final stage, the above research questions were changed into comparing the influences between the creative and analytical teaching approaches:

1. To what extent am I, as an English teacher, able to draw upon the creative and analytical teaching approaches?
2. How will the students respond to these learning activities?

1.5 ORGANISATION OF THE THESIS

This thesis is organised into five chapters. The introductory chapter describes the aim of this study, the background of teaching and learning English in Taiwan, the research problem and research questions. The second chapter reviews the literature about the Triarchic Theory of Intelligence (Sternberg, 1985) and the relevance of this theory to English education. The third chapter, the Methodology, discusses the nature of the action research approach, the research design, the research context, the research process and techniques. The fourth chapter, the Findings, reports the knowledge responding to the research questions. The fifth chapter, Discussion and Conclusion, consists of an overall reflection and a summary of this study.

Chapter 2 LITERATURE REVIEW

There are two purposes to this chapter: firstly, to highlight the importance of intellectual development in Taiwanese higher English education; and, secondly, to evaluate the Triarchic Theory of Intelligence (Sternberg, 1985) at a theoretical level and it relevant applications.

2.1 IMPORTANCE OF INTELLECTUAL DEVELOPMENT

My reflections (as an English teacher) on English education were outlined in the introductory chapter. It showed that intellectual development may resolve the problems of students' dissatisfactory competence and low motivation in learning English. However, the direction of this intellectual development needs to be estimated.

Holistic education (i.e. developing a student's potential as a whole person) was proposed in Taiwanese higher education (Ministry of Education of the Republic of China, 2003a). The content of holistic education is still being constructed in the Taiwanese context (Pan and Wei, 2006). Intellectual development is a unique performance of human beings and should be included in the content of holistic education. With a focus on intellectual development, the insights into higher English education obtained from this study are potentially useful in defining holistic education. A broad view of the concept of intellectual development seems appropriate to be integrated into holistic education in order to develop students' potential in a full rather than narrow approach.

Furthermore, the national curriculum has been widely promoted by governments. There has been some emphasis on intellectual development in the above national curriculum. The importance of developing problem-solving ability has been well acknowledged in British (Hurley and Staff College, 1995; Hajj-Bahous, 2002) and American (Nickerson, 1994) higher education. Developing problem-solving activities in education has also been of interest to the People's Republic of China (China Education and Research Network, 2006), Japan (Ministry of Education, 2001) and Singapore (Chong, 1999).

In contrast to the traditional emphasis on problem-solving ability, new intellectual

development is highlighted.

Firstly, creativity is perceived as an important goal of the national curriculum of Britain (National Advisory Committee on Creative and Cultural Education, 1999), France, Germany, Italy, The Netherlands, Spain, Sweden, Swaziland, Australia, Canada, Japan, Korea, New Zealand, Singapore and U.S.A. (O'Donnell, Sargent, Byrne, White and Gary, 2009). It has also been of high interest to educational ministries in Russia (White, 1990) and Taiwan (Ministry of Education of the Republic of China, 2009).

Secondly, intercultural education (i.e. the lessons of knowledge and skills to develop relationships between peoples from different cultures) is inevitably important in the globalisation trend. Multi-culturalism/equal opportunities is one of the national educational aims of fourteen governments, including Australia, Canada, England, Germany, Hungary, Ireland, Korea, The Netherlands, New Zealand, Singapore, Spain, Sweden, U.S.A. and Wales (O'Donnell, Sargent and Gray, 2008).

As the value of problem solving, creativity and intercultural education is well recognised by governments, these three areas are also included in the ten abilities highlighted in the Taiwanese educational reform (Ministry of Education of the Republic of China, 2008). There is an advantage in taking a broad view of intellectual development to cover all of these areas.

Given the potential of providing insights into holistic education in the Taiwanese context and sharing the emphasis with the above national curriculum, I suggest adopting a broad view of intellectual development in this study. In particular, there is a need for an intelligence theory regarding this viewpoint.

2.2 THE TRIARCHIC THEORY OF INTELLIGENCE AND RELEVANT CRITICISMS

Sternberg (1985) published *Beyond IQ, A Triarchic Theory of Human Intelligence*. The purpose of this theoretical approach toward intelligence is to:

> …specify the loci of human intelligence and to specify how these loci operate in generating intelligent behavior. (p.317)

This theory consists of analytical, creative and practical intelligence. The relevant discussion is as follows:

(i) Analytical intelligence;
(ii) Creative intelligence;
(iii) Practical intelligence;
(iv) A broad view of intellectual development; and
(v) Criticism of this theory.

(i) Analytical intelligence

> Analytical intelligence (which is derived from the componential sub-theory of the triarchic theory) is involved when the components of intelligence are applied to analyze, evaluate, judge or compare and contrast. (Sternberg, 2003a, p.46)

Essentially, 'analyze' (Merriam-Webster Online Dictionary, 2009) means 'breaking up' in Greek. Analytical intelligence is componential and results in a process of classifying information. This componential approach to intelligence has been widely adopted in the field of psychology. An understanding of analytical intelligence has been obtained in many areas, for instance, 'fluid' versus 'crystallised' abilities, 'inductive' versus 'deductive' reasoning (Sternberg, 1985, p.320) and 'analytical skills' (Sternberg and Grigorenko, 2000, p.39) of problem-solving.

(ii) Creative intelligence

> Creativity is the ability to produce work that is both novel (i.e., original, unexpected) and appropriate. (i.e. useful, adoptive, concerning task constraints, Sternberg and Lubart, 1999, p.3)

Creative intelligence refers to creative thinking skills, including the ability to 'create', 'invent', 'explore', imagine', 'suppose' and 'synthesise' (Sternberg, 2003a, p.10).

In order to identifying the distinct nature of creative intelligence, analytical and creative

thinking are often compared. Likewise, De Bono's (1970) comparison between vertical versus lateral thinking[11] was summarised by the following seven aspects:

- Type of thinking;
- Purpose;
- Classification;
- Thinking features;
- Nature of solutions;
- Nature of information; and
- Fundamental operation.

Type of thinking

The types of thinking in vertical and lateral thinking are analytical and creative thinking, respectively.

> Vertical thinking is analytical, lateral thinking is provocative [i.e. inspiring creativity]. (De Bono, 1970, p.40)

Purpose

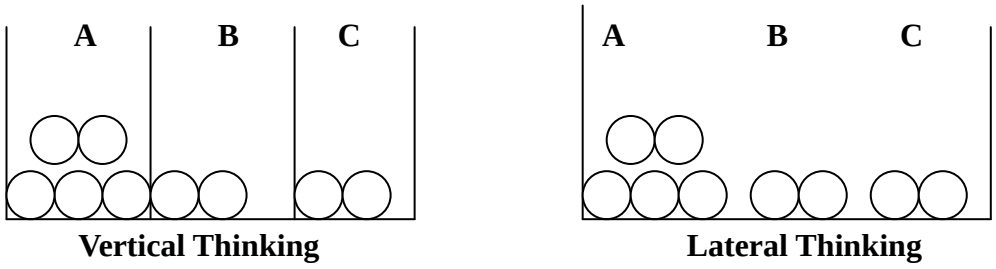
The main purpose of vertical thinking is to evaluate something using a fixed criterion; whilst the main purpose of lateral thinking is to generate new knowledge, including new directions of thinking.

Classification

The classification of information set by vertical thinking is divided into fixed categories. In contrast, in lateral thinking, the classification of information is changeable and flexible. The pattern of categories can be altered and synthesised (see Figure 1, De Bono, 1970).

[11] Lateral thinking is a well acknowledged form of creative thinking. The other forms of creative thinking have been discussed by other researchers. These forms include convergent thinking (Guilford, 1950; Guilford, 1967), imagination (Barsalou, 1999; Sternberg, Castejón, Prieto, Hautamäki and Grigorenko, 2001; Prieto, Parra, Ferrándo, Ferrándiz, Bermejo and Sánchez, 2006), intuitive thinking (Kopardekar and Mital, 1999; Pretz and Totz, 2007) and creative problem-solving (Strzalecki, 2000; Hargadon and Bechky, 2006). The discussion on different forms of creative thinking is not the focus on this study and thus is ignored.

Figure 1: Comparison between vertical and lateral Thinking



Vertical Thinking **Lateral Thinking**

Source: De Bono (1970, p.43).

Thinking features

Vertical thinking requires several features, including:

- Excluding irrelevancy;
- Being correct in every step;
- Tending to be sequential; and
- Moving towards one direction.

In contrast, features of lateral thinking include:

- Welcoming chance intrusions;
- Perceiving mistakes as a positive resource;
- Attempting to make jumps during the thinking process; and
- Generating new directions of thinking.

Nature of solutions

The nature of vertical thinking searches for the most likely paths in order to reach solutions. The function is to move in the correct direction towards a guaranteed solution. The number of possible solutions is minimised for this purpose. In contrast, lateral thinking searches for the least likely paths. The function is to maximise the chances of reaching a solution but there is no guarantee of Having a solution.

Nature of information

The nature of information collected for vertical thinking tends to be similar (De Bono, 1992) and so easily divided into categories. In contrast, lateral thinking seeks information which is different from existing information (De Bono, 1992; Stokes,

2001).

Fundamental operation

The fundamental intellectual exercise of vertical thinking is to divide or classify information. In contrast, the exercise of lateral thinking is to change the existing patterns through synthesis.

The above aspects are summarised in Table 1:

.

Table 1: Comparison between vertical and lateral thinking

	Vertical thinking	Lateral thinking
Type of thinking	analytical	creative
Purpose	evaluating with a fixed criterion	generating new knowledge
Classification	fixed into categories	changeable and flexible
Thinking features	(a) excluding irrelevancy (b) being correct in every step (c) tending to be sequential (d) moving towards one direction	(a) welcoming chance intrusion (b) perceiving mistakes as a positive resource (c) attempting to make jumps during the thinking process (d) generating new directions but no guarantee of reaching a solution
Nature of solutions	minimise the number of solutions to the most likely paths to guarantee a solution	maximise the chances of a solution, but no guarantee of having a solution.
Nature of information	similar	different
Fundamental operation	divide or classify	changing patterns by putting things together in a different way [i.e. a new way, a synthesis]

Source: In nature of information, the concept of 'similar' is from De Bono (1992, pp.216-218) and the concept of 'different' is from Stokes (2001). All the other information is from De Bono (1970, pp.39-45 and p.51).

Sternberg and Lubart (1999) emphasised both the novelty and appropriateness of creativity. In Table 1, only novelty was defined across the different aspects, as follows:

- 'Generating new knowledge' on purpose;
- The 'changeable' (i.e. new) classification;
- The 'new direction' in thinking feature;
- 'Maximise chances' (i.e. including new chances) in solution;

- 'Different' (i.e. new from the current known) information; and
- 'Putting things together in a different (i.e. new) way.

There are no relevant ideas about appropriateness in Table 1. Novelty is the common feature in both Table 1 and Sternberg and Lubart's (1999) study. Therefore, novelty is adopted as the element that distinguishes creative thinking from analytical thinking in this study.

(iii) Practical intelligence

It is defined as:

> …the ability to adapt to, shape and select everyday environments. (Sternberg, Forsythe, Hedlund, Horvath, Wagner, Williams, Snook and Grigorenko, 2000, p.1)

Practical intelligence has been studied in the population of college students (Sternberg et al., 2000) and those in different workplace settings, including law, military, medicine, management, sales and teaching (Sternberg and Horvath, 1999), academic psychology and creative leadership (Sternberg et al., 2000).

Within the broad concept of everyday environment of practical intelligence, tacit knowledge is:

> …an important aspect of practical intelligence. (Sternberg and Hedlund, 2002, p.145)

Tacit knowledge is specifically defined as:

> …the knowledge which reflects the practical ability to learn from experiences and to apply…in pursuit of personally valued goals. (Sternberg et al., 2000, p.104)

The four characteristics of tacit knowledge are:

- It is acquired 'with little or no environmental support', not being typically

acquired through media and people, neither being explicitly taught, nor even verbalized. (Sternberg et al., 2000, p.107);

- It is 'procedural'. (Sternberg et al., 2000, p.107);
- It is 'practically useful' (Sternberg et al., 2000, p.107) and has 'an instrumental value' (Sternberg et al., 2000, p.109; PACE Center, 2009) in attaining personal 'goals' (Sternberg et al., 2000, p.146; Sternberg and Hedlund, 2002); and
- It is 'action-orientated' (Sternberg, 1997, p.236).

Practical intelligence includes social, emotional, intrapersonal and interpersonal intelligence (Sternberg et al., 2000). Thorndike (1920) defined social intelligence as:

> …the ability to understand others and to act or behave wisely in relation to others (as cited in Sternberg et al., 2000, p.77).

Emotional intelligence is the ability to recognise meanings of emotions and to use that knowledge to solve problems (Goleman, 1996). Social and emotional intelligence 'are often treated interchangeably' (Sternberg et al., 2000, p.91). Intrapersonal intelligence is:

> …access to one's own feeling life…as a means of understanding and guiding one's behavior. (Gardner, 1984, p.239)

Interpersonal intelligence is:

> …the ability to notice and make distinctions among other individuals and in particular, among their moods, temperaments, motivations and intentions. (Gardner, 1984, p.239)

All social, emotional, intrapersonal and interpersonal intelligences are involved when an individual takes appropriate action to adapt to, select and shape environments. This defines practical intelligence.

The nature of practical intelligence, which includes tacit knowledge, necessitaties the assessment of this type of intelligence to include a contextual element. The contexts to

assess practical intelligence can be presented in two forms. One is the static, paper-pencil form, such as situational judgment tests (SJTs). These tests require the selection or rating of a list of strategies for solving a practical problem (Sternberg et al., 2000). The other form is dynamic assessment, which observes personal performances in a representation of an actual scenario or its approximation (Sternberg and Hedlund, 2002). The dynamic assessment includes in-basket tests, simulated interviews and simulated group discussions. In-basket tests require a participant to respond to the materials presented in a basket. These materials are relevant to a practical problem (e.g. a medical report, Sternberg et al., 2000). Simulation interviews require an interviewee to probe his/her cognitive processes in order to give responses to a problem relating to a particular scenario (Militello and Hutton, 1998). Simulated group discussion assesses individual performance in a group situation (e.g. leaderless, Bray, 1982). Between these two forms of assessing practical intelligence, the paper-pencil form was often adopted because of 'practicability' (Sternberg et al., 2000, p.122). However, Sternberg et al. (2000) predicted that future assessment of practical intelligence:

> …is moving in a direction of more performance-based, high fidelity [i.e. approximate to real situation] assessment. (p.122)

(iv) A broad view of intellectual development

Consisting of analytical, creative and practical intelligence, there is a broad view of intellectual development in the Triarchic Theory of Intelligence (Sternberg, 1985). This broad view is coherent to the nature of holistic education and includes creativity, intercultural education and problem-solving as mentioned in the national curriculum (see 2.1 Importance of intellectual development). Creative intelligence includes creativity. Practical intelligence involves solving problems in intercultural contexts. All analytical, creative and practical intelligence can be integrated into problem-solving.

A main source for the application of the Triarchic Theory of Intelligence (Sternberg, 1985) in the classroom is the book *Teaching for Successful Intelligence: To Increase Student Learning and Achievement* (Sternberg and Grigorenko, 2000; 2007). Teaching analytical intelligence is explicitly presented in the six steps of problem-solving. Teaching creative and practical intelligence is based on the framework of problem-solving, with the aspect of removing difficulties during the problem-solving process. The analysis of the relationship between problem-solving and analytical,

creative and practical intelligence is as follows:

- Nature of problem;
- Information sources;
- Nature of solutions;
- Agents of introducing problems;
- Scope affected by the results of solution; and
- Motivation.

Nature of problem

The analytical problems (e.g. those in school subjects) are well-structured or less-structured (Sternberg, 1997). The practical problems (i.e. problems in daily life) are less-structured and context-specific (Yang, 1998). The creative problems (i.e. facing new problems or situations) are less-structured and non-structured without known algorithms (Munro, n.d.). For instance, a creative problem task would be to design a room that evokes peaceful feelings (Grigorenko et al., 2002).

Information sources

Information for solving analytical problems tends to be sufficient and accessible in the academic sources (e.g. schools and library). In contrast, information for solving practical and creative problems tends to be insufficient and inaccessible in the academic sources.

Nature of solutions

The solutions for analytical problems are comparatively easier to standardise than those for practical and creative problems. However, solving practical problems requires both factual knowledge and life experience. Its solutions tend not to be easily standardised. Solving creative problems requires knowledge and the recognition of the limitation of knowledge (Sternberg and Grigorenko, 2000) in order to make a breakthrough and so obtain new ideas. The number of solutions for creative problems may be infinite (De Bono, 1970).

Agents of introducing problems

The agents of highlighting analytical problems are usually external from individuals. These agents include schools, teachers and examiners. In contrast, any type of person

can introduce practical problems (e.g. the influence from swearwords), including parents, teachers, friends, oneself and even a stranger in daily life. There is no particular agent for the introduction of creative problems.

Scope affected by the results of solution

The consequences of unsolved analytical problems affect school life (e.g. students being failed). Being unable to solve practical problems has the potential to influence all aspects of an individual's life. The consequence of not being able to solve creative problems is unpredictable.

Motivation

There is a tendency to exceedingly emphasise on extrinsic motivational devices (e.g. grades) when students' analytical intelligence is facilitated.

> …Numerous studies have shown that extrinsic motivation undermines intrinsic motivation…(Lovitts, 2008, p.314)

Students' motivation to solve the analytical problems is often to fulfill the requirements of the school, rather than their personal interest.

In contrast, there is the intrinsic motivation to solve practical problems because of the benefit of self-efficacy (Sternberg, 1999). Also, individuals have a high intrinsic motivation to solve creative problems (Moneta and Siu, 2002). There is enjoyment, satisfaction and challenge during the creative process (Sternberg and Dess, 2001). The intrinsic motivation which facilitates the solving of practical and creative problems is important for academic performance (i.e. primary and ultimate goal of solving analytical problems, Moneta and Siu, 2002). This may suggest a positive result from including all analytical, creative and practical problem-solving to achieve academic success.

The above aspects of problem-solving are summarised in Table 2.

Table 2: Analysis of three types of intelligence in problem-solving

	Analytical Intelligence	Practical Intelligence	Creative Intelligence
Nature of Problem	Well and less structured	Less structured and context specific	Less and non-structured
Information Sources	Academic	Factual knowledge and life experience	Knowledge and recognition of limitations of knowledge
Nature of Solutions	Standardised	Not standardised	Not standardised and may be infinite
Agents of Introducing Problems	Schools, teachers, examiners	Parents, teachers, friends, oneself and strangers	Not specific
Scope Affected by the Results of Solution	School life	All aspect of life	Not specific
Motivation	Tends to be extrinsic	Intrinsic by providing practical benefits	Intrinsic by enjoying the process and new experience

Source: De Bono, 1970; Sternberg, 1997; Yang, 1998; Sternberg, 1999; Sternberg and Grigorenko, 2000; Moneta and Siu, 2001; Sternberg and Dess, 2001; Lovitts, 2008; Munro, n. d.

(v) Criticism of the Triarchic Theory of Intelligence

Two criticisms have arisen concerning the Triarchic Theory of Intelligence (Sternberg, 1985).

Firstly, in the conventional concept of intelligence, *g* factor (i.e. general intelligence, Spearman, 1904) has been dominant in intelligence testing and school assessments. However, its assumption of intelligence as a genetic, fixed mental property has been challenged by the Flynn effect (Flynn, 1987), which identifies the continuous rise in average IQ test scores in many parts of the world. Furthermore, the idea of one single index of intelligence has been criticised by psychologists (Guilford, 1967; Gardner, 1984; Snow, 1984; Sternberg, 1984; 1985).

However, Brody (2003) found:

> …triarchic abilities [i.e. analytical, creative and practical thinking abilities] were substantially related to each other and indicate…covariance among the triarchic abilities... (p.341)

He suggested that the covariance is *g*.

Sternberg's reply (Sternberg, 2003b) was that the above analysis was based on his earlier version of the triarchic ability test which was no longer being used. In contrast to the covariance (Brody, 2003) mentioned, the evidence of factor analysis between analytical, creative and practical intelligence was provided in two studies:

- A study in U.S.A. across eight four-year colleges, five community colleges and two high schools (Sternberg and The Rainbow Project Collaborations, 2006); and
- An international study of Finland, U.S.A. and Spain (Sternberg et al., 2001).

These suggest that these three types of intelligence are distinguishable.

Furthermore, as a contrast to traditional general intelligence, practical intelligence in the triarchic abilities test is a better predictor of first-year college grades than the Scholastic Aptitude Test (SAT, Sternberg, 2003b). Also, the triarchic abilities test has the merit of reducing the gender and ethnic differences of the traditional tests. For instance, the Graduate Management Admission Test (GMAT) tends to favour men over women and white students over black ones (Sternberg, The Rainbow Project Collaborators and The University of Michigan Business School Project Collaborators, 2004).

In relation to *g* and the Triarchic Theory of Intelligence (Sternberg, 1985), Sternberg (2003c) stated that:

> …*g* is a descriptive hypothetical construct. (p.407)

> …[that] so called *g* should correlate with performance on virtually any task that has an analytical aspect…(pp.406-407)

Sternberg (2003c)'s evaluation of the conventional theories of intelligence was:

> …not that conventional theories of intelligence are wrong…but incomplete… (p.409)

Sternberg (2003c) also distinguished that the key difference between the conventional and Triarchic Theory of Intelligence (Sternberg, 1985) is:

> …*g* x (i.e. and) environment interaction [in Triarchic Theory of Intelligence]. (Sternberg, 2003c, p.408)

Secondly, the relationship between analytical, creative and practical intelligence involves ambiguity. The relationship is described as:

> [analytical, practical and creative thinking skills] are not hierarchic but interactively balanced. (Sternberg and Grigorenko, 2004, p.279)

However, analytical intelligence seems more fundamental than creative and practical intelligence:

> …the basic unit of intelligence is the cognitive component [referring to analytical intelligence]. The use of components is most relevant to understanding and assessing intelligence when the components are applied to [1] contextually appropriate tasks and situations [referring to practical intelligence] and [2] either relatively novel or in the process of becoming responded to in an automatic way [referring to creative intelligence]. (Sternberg, 1985, p.322)

2.3 INTRODUCING THE TRIARCHIC THEORY OF INTELLIGENCE TO TAIWANESE HIGHER ENGLISH EDUCATION

As described above, in order to give an appropriate response to the trend of applying M. I. Theory (Gardner, 1984) in the Taiwanese context, this theory is compared with the Triarchic Theory of Intelligence (Sternberg, 1985):

Both theories oppose the single index of *g* factor (Spearman, 1904) to define human intelligence. However, the Triarchic Theory of Intelligence (Sternberg, 1985) is superior to M. I. Theory (Gardner, 1984) in the following aspects.

(i) Gardner (1984) classified 'intelligence' based on data observed and there is no explanation for the thinking processes in the seven areas of M. I. theory (Gardner, 1984). From the perspective of information processing, the central level of information processing is missing in this theory (Scarr, 1985). Without defining the thinking element, the word 'intelligence' used in the title of this theory needs to be reconsidered. Morgan (1992) recognised that these seven areas are matched with 'cognitive styles' in the other psychometric studies. From Willingham's (2004) perspective, Gardner reframes 'talents' from other studies as 'intelligence'. Gardner (1984) did not introduce M. I. Theory with substantial discussion on the relationship between this theory and other relevant studies.

In contrast, the Triarchic Theory of Intelligence (Sternberg, 1985) is contributory in identifying the 'loci' (p.317) of analytical, creative and practical 'thinking', which is the essential element for defining intelligence. Also, the componential, experiential and contextual sub-theories of the Triarchic Theory of Intelligence (Sternberg, 1985) demonstrated the relationship between this theory and the other psychometric studies on intelligence.

(ii) M. I. Theory (Gardner, 1984) was criticised in lack of empirical evidence (Sternberg and Grigorenko, 2004; Atherton, 2005; Waterhouse, 2006a; Waterhouse, 2006b). Furthermore, the relevant empirical data from neurosciences were 'ambiguous' (Dicket, 2005, p.10), including both contributory and counter evidence.

In contrast, the evidence for the Triarchic Theory of Intelligence (Sternberg, 1985) in testing is significant and sufficient (Sternberg and Clinkenbeard, 1995; Sternberg, Ferrair, Clinkenbeard and Gregirenko, 1996; Grigorenko and Sternberg, 1997; Sternberg and Williams, 1997; Sternberg, Gregirenko, Ferrair and Clinkenbeard, 1999; Sternberg et al., 2004; Hedlund, Wilt, Nebel, Ashford and Sternberg, 2006; Stemler, Elliott, Grigorenko and Sternberg, 2006; Sternberg and The Rainbow Project Collaborations, 2006).

(iii) I criticised the studies of applying M. I. Theory (Gardner, 1984) as being co-existent with other instructional factors. For instance, the reading improvement achieved by applying this theory (Avila, Pahuski and Perez, 1999; Reidle, Tomaszewski and Weaver, 2003) involves cooperative learning, peer tutoring, students' freedom to select reading passages and their involvement in journal writing. The distinction in the influences between this theory and the other co-existent instructional factors seems to be rarely discussed both in the contemporary literature and in the trend of Taiwanese application.

Without sound theoretical elements (e.g. thinking), sufficient empirical evidence and discernment from other instructional factors, it is not surprising that applying M. I. Theory (Gardner, 1984) does not improve students' metacognition (Smith, Odhiambo and El Khateeb, 2000) and academic performance in U.S.A. (Osborne, Newton and Fasko, 1995; Smith et al., 2000) and in Taiwan (Zhang, R.-F., 2001).

(iv) The studies of the application of M. I. Theory (Gardner, 1984) in Taiwan were mostly conducted in primary and secondary schools. The subject domains were likely to match the seven areas of this theory only at these levels. Also, the time and energy involved covering the seven areas of this theory have been ignored in its current applications. In contrast, the courses of academic disciplines in higher education are more specialised and require the absorption of a massive amount of knowledge. The disadvantage of not matching the subjects and time and energy consumptions suggest the difficulty of applying this theory in higher education.

Conclusively, the popularity of M. I. Theory (Gardner, 1984) seems to involve the lack of critical understanding of this theory. However, school teachers are not informed of the above drawbacks of this theory. The application of this theory may become a source of problems, rather than providing solutions, as it currently appears.

In contrast, the Triarchic Theory of Intelligence (Sternberg, 1985) consists of thinking elements in a broad view of intellectual development and is supported by sufficient empirical evidence from U.S.A. contexts. There is no counter evidence for applying this theory in the Taiwanese context. Also, this theory is more appropriate in application in

specialised disciplines in higher education than M. I. Theory (Gardner, 1984). Accordingly, the Triarchic Theory of Intelligence (Sternberg, 1985) demonstrates the potential to provide a sound theoretical foundation for teaching English in Taiwanese higher education and therefore was adopted in this study.

2.4 THE RELEVANCE OF THE LITERATURE TO THE PRESENT STUDY

The literature relevant to the present study is discussed in terms of:

- Research design;
- Action research approach; and
- Teaching English.

2.4.1 Research design and the limitation of application

Empirical studies[12] have applied the Triarchic Theory of Intelligence (Sternberg, 1985) to teaching practice in the earlier and later stages.

(i) Common and different parts of instruction

The earlier studies of the Triarchic Theory of Intelligence (Sternberg and Clinkenbeard, 1995; Sternberg et al., 1996; Grigorenko and Sternberg, 1997; Sternberg et al., 1999) involved instruction in each analytical, creative and practical approach to match the students' preferences and predict their performance. Following a pilot study (Sternberg and Clinkenbeard, 1995), a Yale Summer Psychology Program (YSPP) was conducted, involving 199 high school gifted students in 1993 (Sternberg et al., 1996; Grigorenko and Sternberg, 1997; Sternberg et al., 1999). During the four-week intensive (i.e. five days per week, 9 a.m. to 5 p.m. per day) college-level course in *Psychology*, the students received 'common lectures' with 'common texts' of Psychology in the morning (Sternberg et al., 1999, p.7). These lectures and texts were likely to be as analytical as the academic subject contents of most textbooks. In contrast, in the afternoon, the students received one of four forms of instruction, which were memory-related, analytical, creative and practical lessons. The students who received the same teaching approach as their identified ability in the above instruction performed better than those

[12] Some of Sternberg's team's publications overlapped the empirical data (Grigorenko and Sternberg, 1997; Sternberg, et al., 1996; 1999). Some publications included more than one empirical study (Grigorenko, et al., 2002; Sternberg, et al., 1998).

who received the teaching approach mismatching their identified ability.

(ii) Group comparison

Later studies (Sternberg et al., 1998; Grigorenko et al., 2002) emphasised the different performances between groups of different teaching approaches.

Sternberg, et al. (1998) conducted two studies and demonstrated that triarchic intervention (i.e. tri.) benefits students' achievement more than critical thinking (i.e. cri.) and also more than conventional memory-based learning (i.e. m.). In study one, 211 third graders (tri., N = 74, cri., N = 45, m., N = 92, no significant gender difference among groups) received 30 hours (i.e. 10 weeks, 4 days per week, 45 minutes per day) of intervention in *Social Studies*. In study two, 141 eighth graders (tri., N = 60, cri., N = 51, m., N = 30, no significant gender difference among groups) received 210 hours (i.e. 6 weeks, 5 days per week, 7 hours per day) of intervention in *Psychology*. Before the intervention, the teachers received training in either triarchic, critical-thinking or portfolio assessment (i.e. irrelevant to the instructional approach as a control factor) in both studies. The findings of these two studies were:

- In multiple-choice testing, the triarchic group outperformed the critical thinking and memory-based groups in studies one and two;
- In the assessment of analytical tasks, the triarchic group outperformed the critical-thinking and memory-based groups in study one. There was no difference among these three groups in study two;
- In the assessment of creative tasks, the triarchic group outperformed the critical thinking and memory-based groups in studies one and two;
- In the assessment of practical tasks, the triarchic and critical-thinking groups outperformed the memory-based group in study one. There was no difference between the triarchic and critical-thinking groups in study one. In contrast, the triarchic group outperformed the critical-thinking and the memory-based groups in study two; and
- In assessing the assignments, the triarchic and critical-thinking groups outperformed the memory-based group in the analytical, creative and practical assignments in study two.

Three other studies (Grigorenko et al., 2002) demonstrated the same pattern: triarchic

(i.e. tri., analytical, creative and practical plus memory-learning) intervention benefits students' achievement more than conventional memory-based (i.e. m.) learning. In study one, 708 fifth graders (tri., N = 450, m., N = 258, no significant gender difference between groups) received '4.5 to 5 months' (p.177) of intervention in basal reader lessons. In study two, 62 seventh graders (tri., N = 33, m., N = 29, no significant gender difference between groups) received six weeks (i.e. 5 days per week) of intervention in a reading course. In study three, 199 ten to twelve graders (tri., N = 99, m., N = 100, no significant gender difference between groups) received approximately two months of intervention across subjects (i.e. *Arts, English, Social Studies, French, Physical Science* and *History*). Before the intervention, the teachers in the two groups in each of these three studies received training in either triarchic or mnemonic instruction. Their findings were:

- In the testing of memory-analytical tasks, the triarchic group outperformed the memory-learning group in all three studies;
- In the testing of creative tasks, the triarchic group outperformed the memory-learning group in all three studies; and
- In the testing of practical tasks, the triarchic group outperformed the memory-learning group in all three studies.

(iii) Limitation

The present study attempts to apply the knowledge from the above empirical studies. However, there were some limitations to this application:

(iii-i) All the above studies (Sternberg, and Clinkenbeard, 1995; Sternberg, et al., 1996; Grigorenko and Sternberg, 1997; Sternberg, et al., 1998; 1999; Grigorenko, et al., 2002) were conducted in the U.S.A. It seems that there was no discussion of the application of these studies to other ethnic/cultural groups.

(iii-ii) All the above studies (Sternberg, and Clinkenbeard, 1995; Sternberg, et al., 1996; Grigorenko and Sternberg, 1997; Sternberg, et al., 1998; 1999; Grigorenko, et al., 2002) were in primary and secondary schools. In some studies (Sternberg et al., 1996; Grigorenko and Sternberg, 1997; Sternberg et al., 1999), the college-level *Psychology* was the intervention for gifted senior high school students. These students differed in terms of their motivation,

expectation, identity and contexts of learning from those who register for higher education.

(iii-iii) Some of these studies (Sternberg, and Clinkenbeard, 1995; Sternberg, et al. 1996; Grigorenko and Sternberg, 1997; study two of Sternberg, et al., 1998; Sternberg, et al., 1999) involved gifted, rather than mainstream education.

(iii-iv) Some of these studies were conducted in a short-term intensive summer programme (Sternberg, and Clinkenbeard, 1995; Sternberg, et al. 1996; Grigorenko and Sternberg, 1997; Sternberg, et al, 1999; study two of Grigorenko, et al., 2002), rather than an ordinary classroom.

(iii-v) Some of the above studies (study one and three of Grigorenko et al., 2002) were undertaken in ordinary classrooms. However, their research procedures were problematic. The above study one allowed analytical groups in the first of the two continuous years to join the triarchic group in the second year. There were different intervention durations within the triarchic group. Some of the students in this group received the triarchic intervention for a year (i.e. the second year). The other students received this intervention for two continuous years. The above study three involved a different selection process. The triarchic groups were enrolled by the teachers and the analytical groups were randomly selected.

In conclusion, it was worth enquiring whether the principal interest of the above studies was to prove the Triarchic Theory of Intelligence (Sternberg, 1985). These studies did not appear to recognise the inevitable limitation of applying this theory in an ordinary classroom. The only standardised comparison study in an ordinary classroom was conducted at the primary level (study one of Sternberg et al., 1998). The schedule for the intervention was ten weeks, four days per week, forty-five minutes per day. This was obviously different from the pattern in higher education. New knowledge about applying this theory may be discovered in a different research context. This study is an example of applying the above theory in Taiwanese higher English education.

2.4.2 The action research approach

In contrast to the possible motive for proving the Triarchic Theory of Intelligence (Sternberg, 1985) in Sternberg's team's studies, the present study is interested in the realities for an ordinary classroom. The action research approach was therefore adopted for this study in order to acquire knowledge from the relevant teaching and learning experiences. The rationale for adopting this approach will now be discussed.

(i) Professionalism in the quality of teaching

Stenhouse (1975) suggested that a key to professionalism in improving teaching quality is the capacity to apply knowledge from research to teaching. Thus, research-based teaching becomes crucial. However, the discrepancy between knowledge from research and its application in an ordinary classroom is problematic and requires solutions (Carter, 1998; Haggarty, Amos, Oversby and Spear, 1999).

Three potential threats to teachers were raised by this discrepancy. Firstly, the knowledge of how to improve teaching is provided by outsider researchers, rather than insider teachers (Elliott, 1991). The authority of the teachers in their profession is threatened if they tend to be led or supervised by the outsider researchers. Secondly, the teachers are disempowered from applying generalised research knowledge to their teaching (Elliott, 1991). There are different contexts within which knowledge from research and teaching is obtained. It is vital for teachers to overcome their unfamiliarity with the knowledge from research before applying it. Teachers become pressurised when laid with responsibility for whether to be self-practicing, self-reflecting and self-evaluating or be supervised, reflected on and evaluated by the outsider researchers. The above application also involves the misuse of the teachers' intellectual capacities and the knowledge from their teaching experiences to benefit the outsider researchers in their research results. Thirdly, outsider researchers often have greater power than the teachers in the educational system. Typically, the researchers in higher education supervise the teachers in primary and secondary schools. It is often suggested that the teachers should reproduce values (or perspectives) according to research-based knowledge from these outsider researchers (Elliott, 1991). The research-based knowledge can involve the dominant values of the state or society. Without the teachers' reflections, there is a potential danger of teachers becoming the agents of reproducing these values (Elliott, 1991).

In contrast, action research is founded on the teacher as a researcher. The dual role as a teacher-researcher benefits the teachers by acquiring knowledge of their own practices (Elliott, 1991; McKernan, 1996) and forming their own perspectives. Therefore, the three threats described above from applying generalised knowledge based on research can be avoided. This is particularly important for English teachers in Taiwan. In order to counteract the forces outside the classroom (see 1.2.2 Professional practice of English teachers), a Taiwanese English teacher needs to adopt an appropriate stance in order to comprehend, evaluate and take more realistic responsibility for his/her own teaching. It is fundamental for Taiwanese English teachers to have their own teaching perspectives in order to maintain their professional identity amidst the force-driven environment in Taiwan.

Action research has also been demonstrated to be one of the most effective approaches to improving teaching in higher education (Clegg, 2000; Kember and Gow, 2004). However, the organisational culture of higher education tends to contain a greater resistance to the undertaking of action research (Haggarty et al., 1999; Harland and Staniforth, 2000). A greater value regarding performance in higher education is often placed on research rather than on teaching (Harland and Staniforth, 2000). Teaching quality at this level tends to be unmonitored and therefore, unpredictable.

In the Taiwanese context, up to June 2007, only twenty-one of the seventy-two (29%) universities describe their evaluation of their teaching performance. Specifically, only eleven of these twenty-one (52%) universities include student achievement in the evaluation (Wu and Zhang, 2007). The unmonitored and unpredictable teaching quality in higher education seems to be reproduced in the Taiwanese context.

The initial task of teaching English in Taiwanese higher education is to assess the students' needs to see how continuously to facilitate their learning after secondary education. Freshmen in higher education have become a unique data source for comprehending the problems arising prior to higher education. The *Freshmen English* course provides a particular scenario for extracting knowledge from the teachers' teaching and students' learning experiences. This knowledge is highly contextual rather than being transplanted by generalised knowledge from educational theories. Therefore, this knowledge is valuable in providing meaningful responses to the Taiwanese context and in transferring these to other relevant contexts. However, as discussed in the

introductory chapter (see (iv) Development in higher education in 1.2.2), the teachers in higher education seldom reflected on their teaching experience (Xie, 2003). This study is *one* example of how to explore knowledge to meet the students' needs and to improve the quality of the teaching of English in the Taiwanese higher education.

(ii) Professionalism in development

Stenhouse believed that action research increases teachers' empowerment to influence policy making (Ebbutt and Elliott, 1985). This increase originates from their influence as insiders (i.e. teachers, Elliott, 1991).

The self-reflective nature of action research requires teachers to be critical thinkers. Teachers need to commit to being emancipated (McKernan, 1996) from their former understanding of their teaching and the students' learning. The quality of this critical thinking sustains teachers' identities (Elliott, 1991) by preventing them from being mere knowledge appliers or practitioners. The action research approach also facilitates teachers to be role models in teaching critical thinking:

> The teacher should be an example of a person critical of prejudiced attitudes and opinions held by himself and by society at large… (Stenhouse, 1975, p.131)

Furthermore, the self-critical nature of developing the teacher's own educational viewpoints involves 'continuously reconstruct' both 'ethical reflection' and 'practical philosophy' (Elliott, 1991, p.51). With this development, teachers can grow as the extended professional rather than the restricted professional (Hoyle, 1972). Extended professionalism perceives teaching performance involving the 'wider context', including the school, community and society (McKernan, 1996, p.47). The interwoven complexity of the expectations between culture, society, the government, schools, parents, students and the teachers themselves is reflected. This understanding is suggested as necessary knowledge for a teacher (Shulman, 1999). Extended professionalism directs teachers to expand their teaching experience to reflect on the values within the above complexity. The unity of teaching performance and reflection on values generates the meaning of ongoing 'existence' in the 'vocation' of teaching (Stenhouse, 1983, p.189). Consequently, the teachers are sustained and advanced in their profession, which is better than to:

> …become deprofessionalised and transformed into a technician [of teaching]. (Elliott, 1991, p.104)

Teaching English in Taiwan has been influenced by globalisation (Lin, 2003). Under the trend of globalisation, an English teacher in an ordinary classroom tends to be overwhelmed by the values of outsiders. The critical thinking of self-reflection in the action research approach is potential to detect these values; and therefore develop a sound understanding and practical philosophy of teaching English in Taiwanese contexts. Accordingly, it is possible for the professionalism of Taiwanese higher English education to be rooted in its own land.

2.4.3 Studies relevant to teaching English

Applying the Triarchic Theory of Intelligence (Sternberg, 1985) to teaching was studied in subjects in primary education (Sternberg et al., 1998; Grigorenko et al., 2002) and secondary education (Sternberg and Clinkenbeard, 1995; Sternberg et al., 1996; Grigorenko and Sternberg, 1997; Sternberg et al., 1998; 1999; Grigorenko et al., 2002).

Two studies (Sternberg et al., 1998; Grigorenko et al., 2002) are across subjects. One of them mentioned teaching a foreign language (Grigorenko et al., 2002). The main focus of the two studies is vocabulary and reading comprehension. There were no studies relevant to English writing or essay-writing. Examples possibly involving writing activities in the vocabulary and reading comprehension lesson follow:

(i) The analytical lesson

There was no analytical writing activity for *Language Arts* reported in the above studies. In *Arts*, the analytical vocabulary activity was developed in steps (Grigorenko et al., 2002). Students were given a reading text about the *Impressionist Movement* and then a list of definitions for a target word. These definitions were taken from dictionaries. Furthermore, the students were asked to analyse and select the most appropriate definition from the list to explain the target word within the reading text given.

The following activity for reading comprehension in this lesson was to ask the students to:

> …describe a reproduction of a painting by Monet, explaining what features make it characteristic of the Impressionist movement. (Grigorenko et al., 2002, p.198)

There was no clarification in reporting this study (Grigorenko et al., 2002) regarding whether the above description task was oral or written.

(ii) The creative lesson

An example of a creative writing activity was in *Language Arts.* Students were asked to write about unexpected questions:

> Why are there rainbows after a storm? How do rainbows get to be so many different colors? How can you get a pot of gold at the end of a rainbow? (Grigorenko et al., 2002, p.175)

(iii) The practical lesson

In *Language Arts*, the description of the practical lesson was to:

> Develop practical route-planning skills. (Grigorenko et al., 2002, p.175)

There was no explicit writing activity for *Language Arts*.

In *History*, the vocabulary activity for the practical lesson was to ask the students to plan the trip described below using designated vocabulary:

> Design a trip you would like to take. Draw lines on the map showing how you would travel, and describe your trip using the following words… (Grigorenko et al., 2002, p.198)

The following activity for reading comprehension was to ask students to give responses to the task below:

> In the mid 1500s, the King of Spain ruled an empire that extended from Mexico to Peru. As you can see on the map it is a large territory – and

> very far away from Spain when you can only travel by sail. Imagine that you were the King of Spain in the 1500s. How would you handle the situation? What would you do to ensure that your power was respected throughout the empire? (Grigorenko et al., 2002, p.198)

The student groups were then required to present their solutions to the above problem to the entire class and to 'compare to the historical facts' (Grigorenko et al., 2002, p.198). There was no report of any writing activity involved in these tasks. It may have been written notes, sentences, paragraphs or a short essay.

The above studies (Sternberg et al., 1998; Grigorenko et al., 2002) mainly reported the analytical, creative and practical problems given in the instructions. There was no description of how to solve these problems and how to overcome the difficulties of teaching and learning. Furthermore, in the above studies, the information in *Teaching English as a Foreign/Secondary Language* was not found and that of *Language Arts* was slim. It seems that there is no empirical evidence for applying the Triarchic Theory of Intelligence (Sternberg, 1985) in higher education, not to mention specifically in teaching English essay-writing.

Problem-solving was the framework for applying the Triarchic Theory of Intelligence (Sternberg, 1985) in the classroom (Sternberg and Grigorenko, 2000). One study explored the problems related to teaching English writing among Chinese students in higher education (Wang, 2006). These problems included:

- Lack of appropriate teaching materials;
- Lack of appropriate teaching approaches;
- Lack of sufficient instructional hours;
- Students' lack of interest; and
- Students' difficulty in developing writing contents.

The need for an appropriate teaching approach to increase the students' interest and facilitate their thinking in order to produce the writing content was recognised in this study. The emphasis on the writing process (i.e. pre-writing, during writing and post-writing process) helped the Chinese students to solve problems related to their essay-writing (Li, 2000; Wang, 2006). Specifically, the approach of emphasising the

writing process benefited students in producing and organising the writing content. In contrast, the emphasis on writing products benefited the students through improving their vocabulary and grammar (Cao, 2006). The above studies mainly perceived the problems as being analytical. These studies only provided the description of the results of emphasising the writing process versus the product in teaching English writing. There was no information on how to cultivate the students' ability to solve problems in their learning of English writing, or how to integrate this ability into their writing process.

In terms of integrating creative intelligence into teaching English, creative thinking was emphasised when teaching English to Chinese students (Li, 2004; Wang and Li, 2007). There was an idea that creative thinking was important in teaching English writing in higher education (Zhang, Y., 2004). However, there was no clear definition of creative thinking, nor any description of the relevant classroom tasks in these studies.

There is no literature showing the integration of practical intelligence into teaching English to Chinese students.

The present study attempts to apply the Triarchic Theory of Intelligence (Sternberg, 1985) to the subject of teaching English reading and writing. As discussed above, the contemporary published papers only provide one instructional example of creative writing in *Art Language* (i.e. writing about unexpected questions, Grigorenko, et al., 2002). I, therefore, searched the literature sources in the form of textbooks, which often failed to clarify whether it is empirical-based. *Intelligence Applied: Understanding and Increasing Your Intellectual Skills* (Sternberg, 1986) and *Applied Intelligence* (Sternberg, Kaufman and Grigorenko, 2008) applied the above theory in American higher education and advanced secondary education. *Teaching for Successful Intelligence: To Increase Student Learning and Achievement* (Sternberg and Grigorenko, 2000) applied this theory to equip American teachers from kindergarten to twelfth grade level in triarchic teaching. The challenge of the instructional design in this study was how to adopt the examples from the above source of textbooks to teaching English reading and writing in Taiwanese English education.

2.4.4 Conclusion

Based on the above discussion, there was no empirical evidence in relation to the application of the Triarchic Theory of Intelligence (Sternberg, 1985) in the following four contexts:

- In a different ethnic group outside the U.S.A. context;
- In higher education;
- In teaching English as a foreign language; and
- In teaching English essay-writing.

The present study attempts to explore the new knowledge from applying this theory to teaching English in a Taiwanese university. The new knowledge was attempted to be acquired from the following research questions[13]:

1. To what extent am I, as an English teacher, able to draw upon the Triarchic Theory of Intelligence (Sternberg, 1985) to devise meaningful learning activities?
2. How will the students respond to these learning activities?

[13] As stated in 1.4 Research Questions, the research questions were changed in the final, stage three of this study because of the difficulty of developing lessons in practical intelligence (see the details in the chapter on the Methodology).

Chapter 3 METHODOLOGY

The purpose of this chapter is to describe the methods of this study and the relevant decision-making. The findings in the area of the methodology will be reported in this chapter. In contrast, the findings of comparing creative and analytical teaching approaches will be reported in the chapter on the Findings.

There are four parts to this chapter. The first part describes the nature of action research. The second part is the research design and research context, including accessibility and participant groups. The third part consists of the curriculum development, its constraints and attempts at extending the interventional influence. The fourth part is the development of my use of different research methods and techniques in the three stages of this study.

3.1 NATURE OF ACTION RESEARCH

In order to seek knowledge from the teaching and learning experiences in a classroom, this study adopted the action research approach. Having a dual role of teacher-researcher, I obtained the above knowledge. It is necessary to analyse the nature of action research to gain a profound understanding of the knowledge acquired through this approach.

The pursuit of action (or change) and research (or understanding) at the same time (Geoff, 1997) provides a clear-cut distinction between action research and other research approaches. Two fundamental features are derived from this definition. The first feature is the dual role of researcher and practitioner. It can be played by an individual researcher, as I was in this study, or by collaboration between researchers and practitioners (Gray, 2001). The second feature is an interactive process between the changes and understandings with an aim of improving practice (Elliott, 1991). During the research processes, making changes in practice produces new knowledge in the first place; and new knowledge leads to changes in practice in another step.

The conceptualisation of action research is encouraged to be on-going (McNiff and Whitehead, 2006). Listing of features of action research is unlikely to be exhaustive.

Furthermore, common features can be found between action research and non-action research. For instance, the scientific, quasi-experimental research paradigm which perceives the study field as a laboratory is applicable in both action research and non-action research. However, some significant features of action research are well recognised and potentially more often manifested in action research than in other research approaches. The following section only discusses the features of action research relevant to this study.

3.1.1 Epistemological stance

The following three epistemological stances define the nature of knowledge acquired via the action research approach in this study:

(i) Insider;
(ii) Interpretative; and
(iii) Naturalistic.

(i) Insider

In the action research approach, knowledge is acquired as an insider (McNiff and Whitehead, 2006). Stenhouse (1980) defined knowledge as:

> …(not) mean mere information, but logics and skills so interwoven as to strengthen the capacity to think and to act effectively. (p.249)

My dual role of teacher-researcher in this study granted me the epistemological stance to acquire knowledge in this particular classroom as an insider. Furthermore, I did not merely describe the teaching practice as Bartlett and Burton (2006) criticised action researchers for doing. As an action researcher, I actively undertook:

> …a form of self-reflective inquiry. (Carr and Kemmis, 1986, p.162)

The self-reflective inquiry was on-going throughout the research processes in this study. This inquiry was more explicitly demonstrated in the form of my teacher-researcher diary. Nevertheless, Hammersley (1998) suggested selecting the research methods based on the nature and the purpose of the investigation and the resources available. The

above self-reflective inquiry was not only exercised in searching for responses to the research questions, but also in utilising the appropriate research techniques in different stages of this study.

(ii) Interpretative

This epistemological stance asserts that realities exist in:

> …culturally derived and historically situated interpretations of the social-life world (Crotty, 1998, p.67).

When interpretation is involved, the understanding of knowledge is 'value-bound' (Lincoln and Guba, 1985, p.37) in cultural and social influences of the historical contexts. The interpretative stance provides a manageable and reasonably balanced position for a teacher-researcher to play his/her dual role in order to obtain new knowledge. However, since the interpretations are value-bound, the complexity of the research results and difficulties in drawing conclusions must be taken into consideration. Unlike scientific studies, this study did not seek an ultimate conclusion or for the knowledge to be generally applied. Knowledge from this study is 'undoubtedly incomplete or erroneous to some degree' (Lincoln and Guba, 1985, p.84).

In this study, my interpretation is from a teacher-researcher viewpoint which conveys my values, for instance, to improve my teaching in order to benefit my students. These values were uppermost in my ethical decisions to maintain the students' learning in a reasonably normal condition (see Table 11).

In contrast to the above incompleteness of knowledge from the interpretative stance, Brown and Jones (2001) advocated that an open-ended approach should exist in the interpretation of action research. An ultimate conclusion is not necessary and a degree of uncertainty is allowed. In this study, this open-ended approach was presented in the inquiry process. Schon (1983) divided reflections into 'on-action' and 'in-action' (p.55). 'On-action' reflections follow the prescribed theoretical framework. In contrast, 'In-action' reflections were:

> …not dependent on the categories of established theory or technique… (Schon, 1983, p.68)

In this study, the Triarchic Theory of Intelligence (Sternberg, 1985) provided an important framework of 'on-action' reflection. However, the purpose of my investigation is not to validate this theory as was the aim of the studies of Sternberg's team (see (iii) Limitation in 2.4.1). The purpose of this study is to discover insights from the experiences of applying this theory in a Taiwanese university context.

Without considering the above framework, my 'in-action' reflection is to identify the co-occurring significant factors during the process of searching for responses to the research questions. For instance, interference from the first language, which is not originated from the research questions, is included in discussion. In contrast, I only managed the less significant factors to a certain degree. For example, the students expressed their lack of vocabulary for writing essays. I only suggested that they should use the vocabulary in the textbook and in their memory. I did not intend to investigate and seek a substantial solution to this problem.

It should be noted that it is often oversimplified to distinguish quantitative and qualitative studies in terms of their evidence being in either the form of numbers or words. It is that the epistemological stance between positivistic and interpretative perspectives, rather than types of data, can clarify the nature of knowledge. In a qualitative study, a positivistic perspective can be adopted and the findings of the study can be perceived as the objective truth. In contrast, in this qualitative study, the interpretative perspective was adopted, although objective data was involved. For instance, test scores in this study were objective evidence of the students' achievement. In data interpretation, the testing scores were perceived as indicators. Along with other data sources, the test scores indicated different learning attitudes and relevant disciplines between two participant groups.

(iii) Naturalistic

Lincoln and Guba (1985) proposed the research paradigm (i.e. a set of assumptions) of naturalistic inquiry. In this paradigm, the epistemological stance is that the realities are 'multiple, constructed and holistic' (Lincoln and Guba, 1985, p.37). In this study, knowledge has been constructed from different perspectives on my own teaching and the students' learning experiences. My perspective was mainly explored in my teacher-researcher diary. In contrast, the students' viewpoints were explored by different

data sources, including interviewing, their written reflections upon this intervention, and an on-line course survey. Also, my dialogues with them during the breaks, between sessions of lessons, and after classes became part of the source of my reflections in my teacher-researcher diary. Furthermore, efforts to sketch a holistic picture of this research context were made. Some influential factors on my teaching and on the students' learning which were not emphasised in the research questions were discussed.

In summary, the insider epistemological stance to knowledge acquisition is essential and necessary for all action researches. In contrast, the interpretative and naturalistic nature of this study is not necessary to be adopted in other studies of action research.

3.1.2 Inquiry model

In Stenhouse's (1980) reflection:

> The improvement of teaching is not the linear process of the pursuit of obvious goals. (Stenhouse, 1980, p.244)

This suggests that the improvement of teaching necessarily involves complexity and the process of improving could not be simplified as a straightforward outcome from causes. In this study, the improvement in the quality of my teaching was embedded in the research process in order to obtain the appropriate the students' responses towards research questions. This improvement was mainly made from stage two to three (see (i) My pedagogic changes in 3.4.3.6).

The process of searching for responses to research questions in this study was not linear but spiral. *Spiral* refers to the processes of action research that recur and demonstrate a progressive dynamic (Geoff, 1997).

In Argyris' and Schon's (1991) model:

> Action research takes…its questions,…builds descriptions and theories within the practice context itself, and then tests them through the intervention experiments. (p.86)

Applying this model, the desirable changes were made in the process of testing hypotheses to search for responses to research questions. The relevant spiral inquiry processes consisted of the steps between action and decision-making.

(i) An action (i.e. testing, e.g. teaching an experimental lesson consisting of creative tasks in stage one);
(ii) A decision/reflection according to the action (i.e. descriptions or theories within this research context, e.g. developing lessons for creative writing in stage two); and
(iii) A possible further action from the decision/reflection upon the previous step (i.e. testing, e.g. reduplicating the above lessons with a small added portion to assess creativity in stage three).

3.1.3 Type of participation

There are three types of participation in action research:

- Collaborative;
- Facilitative; and
- Expert involvement (Baskerville, 1999).

Collaborative involvement indicates that the action researcher and the 'study subjects' (i.e. student participants in this study, Baskerville, 1999, p.4) are co-workers. They share the task without distinctive power differences in collaboration. Facilitative involvement distinguishes the action researcher as an expert who does not solve problems for the participant subjects. The responsibility of solving problems during the research process rests on the participant subjects. In contrast, the action researcher takes such responsibility through expert involvement.

The operation of decision-making by participant subjects in collaborative and facilitative involvements is important to internalise the expected learning target (Gokhale, 1995). However, I concluded that only expert involvement was appropriate in this study. The responsibility of solving problems in the intervention should be laid on me as a teacher, rather than on the students.

From my perspective, another ethical issue arises from the suggestion proposed by Nolen and Putten (2007):

> Establish a relationship between the researcher and participants…as democratic as possible. …the participants become part of the decision-making process in all phases of action research. (p.405)

In this study, the students' lack of knowledge and experiences in an intellectual approach to learning English reading and essay-writing was obvious. Therefore, the involvement of their decision-making in 'all phrases of action research' (Nolen and Putten, 2007, p.405) would have been unrealistic and also unethical. This decision-making is normally the responsibility of a trained, paid professional teacher. In meeting the above aspiration for democracy in action research, a teacher-researcher might be criticised for being irresponsible because of his/her inappropriate allocation of responsibilities.

3.2 RESEARCH DESIGN AND CONTEXT

There are three stages to this study. The goals of the first stage were to:

- Investigate the appropriateness of creative and practical lessons;
- Develop a new measure of the triarchic curriculum; and
- Adapting my capacity to teach in this research context; and
- Become familiar with the research process.

The purpose of the second stage was to:

- Apply the developed triarchic curriculum; and
- Compare the triarchic and analytical groups.

Both groups received the analytical lessons. However, the triarchic group received the creative and practical tasks; whist the analytical group had time for self-study as a counterpart. Rather than comparing the experience of one group receiving triarchic lessons over a period of time, the above design explored the differences between analytical and triarchic teaching. The knowledge acquired in this study may therefore

contribute to the transition from the traditional, analytical approach to the novel, triarchic teaching approach.

At the end of stage two, the development of lessons for practical intelligence was unsuccessful. Thus, the research questions were changed to make comparisons of the influence between the creative and analytical teaching approaches. Also, according to the reflections on teaching and research in stage two, I chose the interpretative-naturalistic, rather than the positivistic, quasi-experimental research paradigm for this study in stage three. I also identified how to improve my teaching and my foci on teacher-researcher diary, as well as self-practised my interviewing for stage three.

Within the interpretative-naturalistic research paradigm, the aim of stage three was to:

- Improve the quality of my teaching;
- Investigate the stability of the analytical and creative lessons which had been developed;
- Sharpen my focus of writing teacher-researcher diary; and
- Apply my polished interview skills,

A summary of the foci across the three stages are shown in Table 3.

Table 3: Foci across three stages

Aspect/stage	One	Two	Three
Curriculum	Appropriateness of creative and practical lessons	Development of triarchic curriculum	Stability of analytical and creative lessons
Teaching	Adapting my teaching	Increase my capacity to teach two groups	Improvement of my teaching qualities
Research	Be familiar with the research process	Comparing two groups	1. Change the research questions 2. Compare two groups
Testing	A new measure of the triarchic curriculum	--	--
Writing teacher-researcher diary	--	Reflecting on the research paradigm, the quality of my teaching, interviewing and diary writing	Sharpen the foci of my teacher-researcher diary
Interview skills	--	Self-practise exercise	Apply polished interview skills

The accessibility of conducting this study and the characteristics of the participant groups follow.

3.2.1 Accessibility

In order to investigate in a genuine university, this study was subject to the constraints of the Taiwanese educational system and the organisational contexts of universities. The participant groups were identified in a convenience sample after three attempts.

My first attempt was to co-teach the intervention with a teacher in a university. One teacher agreed to join with co-teaching, but withdrew her willingness after several weeks, citing the inappropriateness of the study. For the sake of courtesy, I did not ask for further explanation. A possible reason for this withdrawal was the criticism that co-teaching may be perceived as inappropriate distribution of obligation from an employed teacher to me as an outsider. I had obtained the Certificate of Teaching in Higher Education from the Ministry of Education in the R.O.C. (namely, Taiwan). Without the same employed status in this university, the above criticism could be easily raised. Another possible reason was the tension caused by the students' comparison of

teachers. Particularly, the course survey from the university is one of the indicators of a teacher's performance in higher education.

I acknowledged the necessity to become an insider teacher-researcher to resolve the above difficulty. I decided to apply for employment in a university.

My second attempt was as follows. I supposed that there would be a greater chance of the permission for my study in research-intensive rather than non research-intensive universities. However, when I unveiled my research intention, the chairperson of a department in a research-intensive university evaluated and commented:

> This research is not appropriate for this university. A teacher should teach a lesson. (Telephone conversation, August, 2004)

This perspective demonstrated a lack of understanding of the potential contribution of teacher-researchers. I realized the inappropriateness to conduct my study within this research context.

My third attempt was to be employed in another research-intensive university. Through the formal job interview process (i.e. a teaching demonstration and other parts of assessment), I was offered a post teaching the course of *Freshmen English*. My intention to do research was favoured because this university was eager to compete with other research-intensive universities. Therefore, the present study was located in one of the seven research-intensive universities. Out of the ninety-four universities in Taiwan (Ministry of Education of the Republic of China, 2003b), these universities were renowned for academic publications (Huang, 2005).

3.2.2 Participant groups

In this university, all the freshmen take a language placement test in a multiple-choice format. On the basis of the test results, the students are placed in one of advanced, intermediate and basic levels of *Freshmen English*. The advanced level was selected for my investigation in order to reduce the language barrier in English for receiving a teaching approach to intellectual development.

Two other factors were considered in placing the students. Firstly, the students were grouped according to the patterns of the timetables to form an across-major class of *Freshmen English*. Those sharing a common timetable were divided into three levels according the above test result. Secondly, the number of students in each class was expected to be similar in order to balance the workload among teachers. If there were a greater number of students in one than the other two levels in the common timetable, some of the students from this level would be reassigned to the other two levels. These two factors introduced the discrepancy of English proficiency in each of the three levels across different common timetables. The averages of the placement test results in each level of groups sharing a common timetable may be different from that of groups sharing another common timetable.

Furthermore, the students withdrew and were failed after the above selection process. The following description of the participant groups is the third stage of the three stages of this study. The descriptions of the participant groups in stages one and two are ignored because they were not the focus of the comparison.

There were originally thirty-eight students in the creative group; and forty-four students in the analytical group. In the creative group, two students withdrew. One emigrated to another country. The other rejoined the national testing in order to reapply for a desired university. Another student in this group was failed for not taking a midterm test. In the analytical group, two students were failed for missing more than one third of classes.

The intervention of *Freshmen English* was the only compulsory English course in Taiwanese higher education. It was difficult to investigate the students' attendance patterns in their former English education. The above absence might be caused by the students' reluctance regarding:

- Learning English;
- Attending a compulsory English course;
- Joining the mid-term test;
- Participating in this study; or
- Neglecting the consequences of poor attendance and missing the midterm test.

Consequently, there were thirty-five students in the creative group; and forty-two students in the analytical group.

Although this study was primarily qualitative in nature, it was desirable that the two participant groups were as similar as possible as counterparts to compare. The two advanced groups with the most similar majors were selected for this study. At the outset of this stage of the research, there was no significant difference between them in the pre-tests:

- My version of the language test; and
- *The College Academic Aptitude Battery*[14].

My version of language test measures the achievement in vocabulary and reading comprehension in multiple-choice format. I selected the test content from the prescribed instructional chapters of the textbook. *The College Academic Aptitude Battery* is the only standardised aptitude test at adult level in Taiwan. It measures the students' aptitudes in languages and mathematics.

There were four similar characteristics between these two groups:

(i) Foreign language learners;
(ii) Test culture;
(iii) Youth culture; and
(iv) Large class size (i.e. 35 students in the creative group and 42 students in the analytical group).

However, there were differences between the two groups:

(i) Gender patterns;
(ii) English language proficiency; and
(iii) Socio-economic status.

[14] *The College Academic Aptitude Battery* (editors: Lu, Jun-Yue [路君約] and He, Rong-Qui [何榮桂] (Eds. 1986, February). Taipei: Chinese Behavioural Science Corporation).

(i) Gender patterns

There were clear gender differences, with more male than female students in both groups. The ratio of male to female students was 54% to 46% in the creative group. In contrast, it was 69% to 31% in the analytical group (see Table 4). This gender difference might have radically altered the way in which the intervention operated.

Table 4: Gender difference

Group/Gender	Male		Female		Total	
Creative	19	54%	16	46%	35	100%
Analytical	29	69%	13	31%	42	100%

(ii) English language proficiency

In contrast to the lack of any significant difference in my version of the language test, a significant difference between the two participant groups (t (67) =-3.52, p<.001) was found in the university language placement test before the intervention. This suggested that the creative group had higher traditional language proficiency than the analytical group before the intervention.

(iii) Socio-economic status

Based on background information about parental occupations given by the students, thirty-three of the thirty-five (94%) students in the creative group and twenty-five of the forty-two (60%) students in the analytical group were possibly from middle-class families (Table 5). It seemed that there were more middle-class families in the creative group than in the analytical group.

Table 5: Parental occupations

Parental Occupation	Middle Class		Non Middle Class		Total	
Creative Group	33	94%	2	6%	35	100%
Analytical group	25	60%	17	40%	42	100%

Note: the parental occupations in the middle class families include manager, civil service, teacher, self-employment and engineer.

Also, the geographical area in which the students received their primary and secondary education (also probably their hometowns) may be an indicator as to their prior knowledge before the intervention. Twenty of the thirty-five (57%) students in the creative group and fourteen of the forty-two (33%) students in the analytical group were educated in Taipei City, the capital city and the most developed area in Taiwan. This

suggested that the students in the creative group might have had a greater educational and cultural advantage than those in the analytical group.

The original purpose of obtaining the above information was as a reference to facilitate better communication in teaching and in interviewing. Only general, rather than specific information was sought. The information related to parental occupations, not the range of family income. Other data were the geographical areas of the students' primary and secondary education. There was no assessment of their cultural (Bourdieu, 1997) and social (Protes, 1998) capital, which has been acquired from family education, schooling, media and other means. The above group difference in the student family socio-economic status is a possibility, but not definite.

3.3 CURRICULUM DESIGN

There were two aspects of curriculum design. One aspect was to integrate the triarchic and analytical teaching with the two instructional goals of reading comprehension and essay-writing in *Freshmen English*. The other aspect was to develop the distinctive analytical, creative and practical lessons in order to observe the students' responses to each type of these intelligence lessons. Therefore, a broad viewpoint of intellectual development in the Triarchic Theory of Intelligence (Sternberg, 1985) can be facilitated by including all three types of intelligence lessons. Understanding of three different types of intelligence tasks may be obtained in order to compare it to the traditional, analytical teaching approach.

At the end of the second of the three stages of this study, the lessons for practical intelligence were found to be too difficult to develop in this research context. The research questions were changed into the investigation of the influence of the creative and analytical teaching approaches. The above broad viewpoint of intelligence from the Triarchic Theory of Intelligence (Sternberg, 1985) was altered into only focusing on creative and analytical thinking.

3.3.1 The students' characteristics

Curriculum design consists of the instructional contents and relevant learning activities. From my teaching experience of a dozen years, it was necessary to consider the

students' characteristics, particularly in designing the learning activities. The students played an active role in producing learning outcomes. Their characteristics revealed their essential needs and inevitably interacted with any lesson taught. Without considering the students' characteristics, the above instructional goals and intellectual development seemed unlikely to be achieved. Prior to designing the lessons, I perceived the four important characteristics of the two participant groups as described (see 3.2.2 Participant groups).

Accordingly, I developed strategies to manage these characteristics to a reasonable degree. I was aware of not losing the focus on the curriculum development at the expense of exercising these strategies.

(i) Foreign language learners

As foreign language learners (see footnote 4), these students needed linguistic aids (e.g. the following sentence) and specific linguistic goals in their learning process. The examples were as follows:

- Use a noun or an adjective to describe the hero of the story to formulate a central idea for essay one, specifically, to complete the following sentence: Mickey Mantle is ____ (adjective) or a _____ (noun);
- List ten adjectives to describe the scenario in the story; and
- Use simple English, which you know, to describe the new vocabulary or a picture in creative writing.

(ii) Test culture

The students tended to have low motivation and unsatisfactory ability in learning English due to the influence of national testing (see 1.2.1 Entering into English education). The strategies for adjustment away from rote-learning included:

- Requiring individualised responses (e.g. formulating a thesis statement from an individual viewpoint) in order to change the habit of seeking only standardised, 'correct' answers;
- Allowing mistakes and redoing; and
- Allowing student decision-making, such as selecting either gender, cultural or generational comparison in their second essay.

The strategies for developing the students' abilities included:

- Dividing the lessons for essay-writing and creative writing into different stages; and teaching creative and practical lessons later than analytical lessons to guide the students' gradual progress; and
- Providing knowledge of meta-cognition. For instance, the reason for the students being unable to identify the central idea in a reading passage was that they had focused on the part which aroused their attention, (i.e. mostly the topic sentence in the introduction) rather than following the logic of the entire reading passage to recognise the controlling idea.

(iii) Youth culture

Youth culture refers to the students' general lifestyle, study habits and perspective on higher education in this research context. The current tendency of youth culture is to seek freedom and lack of discipline. In order to facilitate the students to be mature learners, the introduction lesson to extend the intervention (see (iii) Attempts to extend the intervention in 3.3.7) might be helpful in countering the deleterious aspects of the above youth culture to a very limited extent.

(iv) Large class size

It was unlikely for me to meet individual needs of these inexperienced thinkers in such large class sizes (i.e. 35 in the creative group and 42 in the analytical group). The following strategies were developed to counter deleterious aspects of large class sizes:

- Small group work during lessons;
- Good classroom management (see (iii-i) General aspect in 3.3.7); and
- Stating this difficulty to the students and encouraging them to approach me (i.e. their teacher) to address their problems.

However, the influence of the large class sizes was only limited to a certain extent and was a burden in my teaching:

> …both classes were too large to be instructed…to meet the individual needs. (My teacher-researcher diary of stage three, October 4, 2005)

3.3.2 Difficulty of applications from literature

The challenge of curriculum development involved two aspects. The first aspect was applying the Triarchic Theory of Intelligence (Sternberg, 1985) into the subject teaching of English reading and writing. The second aspect was the constraints of the above application within this research context. The following section discusses the first aspect and relevant strategies. The second aspect and relevant strategies will be discussed in the sections on curriculum development (see 3.3.3 Development of analytical lessons to 3.3.5 Development of practical lessons).

In the Literature Review chapter, only some instructional ideas of triarchic teaching in English vocabulary and reading comprehension were found. There were no detailed lessons. Furthermore, the area of teaching English essay-writing was the focus of developing triarchic lessons in this study (see details in (ii) Constraints of 3.3.7). No learning activities in this area are provided from the contemporary literature.

My strategy to solve this problem was to seek the possibility of integrating appropriate thinking tasks in the lessons of essay-writing. There are different verbs to describe mental activities of analytical, creative and practical thinking (see Table 6).

Table 6: Verb descriptions for the three types of thinking

Analytical Thinking	Creative Thinking	Practical Thinking
1. compare and contrast	1. create, invent, design	1. put into practice, implement a plan
2. analyse	2. imagine, suppose	2. use, utilize, apply, employ (knowledge or formula)
3. explain	3. discover, explore	3. render practical
4. evaluate, judge, critique, assess	4. synthesize	
5. critical thinking	5. predict (in an imaginary scenario)	
6. critical reasoning		

Data source: Sternberg, 1998; 2002; 2003a; Sternberg, Grigorenko, and Jarvin, 2001; Sternberg and Grigorenko, 2002; 2004.

Also, problem-solving has the potential to develop triarchic lessons. Examples of analytical, creative and practical problem-solving based on the steps of the information process are provided in the textbooks, *Intelligence Applied: Understanding and*

Increasing Your Intellectual Skills (Sternberg, 1986) and *Applied Intelligence* (Sternberg et al., 2008). However, these examples are the descriptions of problems (e.g. arithmetical and logical word problems), how to solve the problems (e.g. selective encoding,) and the standardised answers to these problems. Such examples were very technical and appropriate to develop for assessment. In terms of devising meaningful learning activities, these examples seemed to direct the lesson planning into seeking standardised answers to the prescribed problems. The constant use of prescribed problems and standardised answers in my routine teaching might have reduced the students' learning motivation. Firstly, since all problems are prescribed, there was no thinking space or guideline for facilitating the students' ability to formulate problems. Secondly, there is a lack of an element to arouse the students' interest in these examples. Thirdly, the above major form seemed similar to studying for tests from which the students would be eager to be detached.

Only some general instructional guidelines are provided in these two textbooks. For instance, in the lesson on how to improve the resource allocation, one guideline is: Be on the lookout for new kinds of resources. There were no substantial lesson plans for this step of problem-solving.

Furthermore, there was no demonstration of integrating problem-solving to teaching the subject contents in a form of lesson plans. Particularly, there were no examples regarding teaching the language course, not to mention teaching English as a foreign language, or teaching English essay-writing.

Another textbook source, *Teaching for Successful Intelligence: To Increase Student Learning and Achievement* (Sternberg and Grigorenko, 2000; 2007), which is also based on the framework of problem-solving, includes instructional ideas and activities. In the major part of this book: Building successful intelligence abilities, the features of analytical, creative and practical intelligence were listed. A lesson for each intelligence feature description consists of:

- The name of the intelligence feature (e.g. identify problems);
- Target skill (e.g. identifying problems);
- Prompt words or phrases (e.g. identify, figure out, recognise, name, define, detect, understand);

- Using it in life;
- Taking it to the classroom; and
- Taking it to heart (i.e. 'teachers should list five activities they can give to and discuss with students that will help students understand and identifying problems', Sternberg and Grigorenko, 2000, p.42).

I searched the section on 'Taking It to the Classroom' for applicable learning tasks. This section consists of two parts: firstly general guideline; secondly, instructional ideas in the subject areas of *Language Arts*, *Mathematics*, *Science*, *Social Studies*, *Foreign Language*, *Art*, *Music* and *Physical Education*. However, the application of this section was problematic.

(i) General guidelines

I found it difficult to adopt examples from the section to take into classroom in three aspects:

(i-i) Language
(i-ii) Format; and
(i-iii) Contents of definitions.

(i-i) Language

The language used in defining the intelligence features is not concise. This is illustrated in the following example from the 'Defining Problems' feature:

> The goal is to encourage the students to formulate and ask questions, not just to answer them. Thus, teachers should encourage the students to pose what they see as fundamental questions about whatever topic they are studying. The students should also be encouraged to think about why these questions are important (Sternberg and Grigorenko, 2000, p.42).

In the first sentence, there is no clarification between 'formulate' and 'ask'. The step of 'ask questions' can be included in the process of 'formulate questions'. In the second sentence, the concept of 'fundamental questions' is implied in the reason for the questions being 'important' in the third sentence. These overlapping concepts can be combined in order to avoid redundancy.

(i-ii) Format

The formats of descriptions among lessons were various. The contents of this section include descriptions from goals, tasks, example stories, prior knowledge to Sternberg's personal experiences. These various formats caused difficulty in locating specific information for lesson planning.

Without lesson plans provided, the goal description was essentially important for me to design the relevant learning lessons. However, the lengths of goal description in each lesson varied from none, only one-sentence to more than half a page. There was no goal description in the 'Managing Self-pity' lesson in the first edition (Sternberg and Grigorenko, 2000). The goal description for the same lesson was presented in a form of a story, which was different from any other lessons in the practical intelligence in the second edition (Sternberg and Grigorenko, 2007). The non-standard description of the goal for lessons risked losing sight of the aim of providing clear instructional target.

(i-iii) Definitions of intelligence features

Since the goal description of each lesson was difficult to locate, I searched the definitional description of each intelligence feature in order to develop relevant instructional goals. However, there were concerns in these definitional descriptions.

(i-iii-i) Unessential

Some parts of the definitional descriptions are not essential. Taking the above example of 'Defining Problems' (see (i-i) Language in 3.3.2), 'pose' can be excluded from the above definition without losing the function of defining the task. The word 'should' can be omitted as the definition is in nature instructional, rather than ethical.

(i-iii-ii) Oversimplified

Some definitional descriptions are oversimplified. For instance, in the 'Handling Personal Difficulties' lesson, the definitional description is 'giving examples of people who faced enormous challenges and bounced back' (Sternberg and Grigorenko, 2000, p.107). Applying this to classroom practice would be quite a challenge in terms of guiding the entire class. The examples given may be helpful for some of the students but not for others because of the diversity of personal difficulties. Furthermore, it would be unlikely to solve personal difficulties by merely giving examples. This intelligence

feature essentially involves a process of problem-solving for each individual student and there is no detailed guidance on the aspect of individual development.

(i-iii-iii) Too specific

Some definitional descriptions are very specific and therefore limited the flexibility of their application. For example, in the definition of 'Monitor Problem-Solving Strategy':

> …to have students to hand in successive work and give feedback… (Sternberg and Grigorenko, 2000, p.49)

The aim of this task can also be achieved by the teacher-researcher's observations of the student learning processes. The above description is a specific task. Applying such a specific description is limited in the variety of instructional tasks. Teacher-researchers would be less encouraged to devise their own instructional tasks to match their students' needs with such specific descriptions.

(i-iii-iv) Lack of operational definitions

Most importantly, there was a lack of cognitive operational definitions (i.e. how to exercise the cognitive process to facilitate thinking) in most of the intelligence features. As a classroom teacher-researcher, I needed this type of definitions to comprehend the application of an intelligence feature in my instructional design. In contrast to the specific task descriptions mentioned, this type of definitions leave appropriate room for the teacher-researcher to design learning activities and avoid the inflexibility mentioned.

I expanded my searching into other parts of lessons, including 'Targeted Skill', 'Prompt Words or Phrases', 'Taking It to Heart' in order to identify relevant descriptions of cognitive operational definitions. However, in altogether of analytical, creative and practical intelligence (Sternberg and Grigorenko, 2000), twenty-nine of thirty-seven (78 %) features have no cognitive operational definitions in all the sections searched. In these intelligence features, some ideas were related to cognition, for instance, 'persuade, convince' (p.62), 'increase student interest' (p.86) and 'match pursuit to abilities' (p.90), 'analyze…mistakes' (p.99), 'recognise…self-pity' (p.105) and 'recognise …personal difficulties' (p.108). However, there was no cognitive procedure provided to achieve these cognitive goals.

Other four of the above thirty-seven (11 %) features provided problematic cognitive operational definitions:

- The 'Identify Problems' feature involves inaccuracy of use of language. 'Identify problems' is more accurate than 'formulate and ask questions' (p.42) in terms of describing the relevant cognitive operation.
- The 'Represent and Organise Information', 'Monitor Problem-Solving Strategy' and 'Evaluate Solutions' features describe specific cognitive activities, rather than cognitive operational definitions. Such description introduced the inflexibility of application (see (i-iii-iii) Too specific in 3.3.2).

Only four of above thirty-seven (11 %) features provide comprehensive cognitive operational definitions:

- The 'Allocate Resources' feature was defined as 'decide what source they need…how to allocate resources' (p. 44);
- The 'Don't Procrastinate' feature was defined as 'setting sub-goals' (p.101);
- The 'Schedule Accordingly' feature was defined as 'identify and schedule reasonable time to carry out their activities' (p.111); and
- The 'Balance Thinking Skills' feature was defined as 'distinguish between appropriate times to use each of the three thinking skills' (p.115).

(i-iii-v) Overlap

Some definitions of intelligence features overlap the cognitive, affective and conative processes. For instance, the general task descriptor of 'Defining Problems' feature was 'encourage'. Encouragement seems to be an affective, rather than cognitive exercise. The specific task descriptors, such as 'formulate', 'pose', 'think' are too abstract to identify the relevant cognitive exercise. In the second edition (Sternberg and Grigorenko, 2007), group discussions and individual conference (i.e. role play as a representative in a conference, p.40) were added to this lesson. However, the problematic definition of this feature remained unchanged. My version of defining this feature is as follows:

The teacher facilitates the students to identify problems, including the

> surface and fundamental levels of the problems, and to explain the importance of their understanding at the fundamental level.

In this definition 'identify' conveys an operational meaning of selecting or searching for relevant information. The division of intellectual development into two levels is clear. 'Explain' is an explicit reasoning skill. Accordingly, teachers can design the relevant learning activities to activate the function of these two cognitive levels with their teaching experience. Their instructional designs are supported by providing the thinking space with this operational definition.

(ii) Instructional ideas for subjects

Following part of the general guidelines, there were instructional ideas in different subjects in the 'Taking into Classroom' section. These ideas include cognitive activities. This part of description involved the three aspects:

(ii-i) Vague;
(ii-ii) Ambiguity; and
(ii-iii) Overlap. .

(ii-i) Vagueness

Some descriptions of them are vague in relationship with problem-solving. For instance, in *Language Arts*, the activity for 'Defining Problem' feature was:

> …selecting a book on which to write a report. (Sternberg and Grigorenko, 2000, p.42)

What is the relationship between this and identify problems? In the activity for *Foreign Language*, the activity for the same feature was:

> …figure out an effective way to learn a list of foreign-language equivalents to an English word. (Sternberg and Grigorenko, 2000, p.42)

It seems to be a solution, rather than a problem.

(ii-ii) Ambiguity

Some descriptions of activities involve ambiguity. In *Language Arts*, the activity for 'Monitor Problem-solving Strategies' was:

> …to check whether the main points are clear as they [i.e. the students] read a book. (Sternberg and Grigorenko, 2000, p.49)

The activity for 'Evaluate Solutions' was:

> …proof read a paper. (Sternberg and Grigorenko, 2000, p.51)

Both activities involved evaluation of correctness. What are the different cognitive exercises between these two activities?

(ii-iii) Overlap

The overlap between cognitive and psychological aspects in the definitional description of intelligence features (see (i-iii-v) Overlap in 3.3.2) was also in the descriptions of these instructional ideas.

For instance, in the subject of *Foreign Language*, the instructional idea for facilitating 'Managing Self-pity' was:

> Teachers can encourage students to pull themselves together after they feel humiliated because of communicating poorly to a person who fluently speaks a foreign language. (Sternberg and Grigorenko, 2000, p.104)

This instructional idea was a goal for a psychological change. There was no specific guideline for a relevant cognitive task, which may direct the students' perspective from self-pity to a positive perspective. Also, the guideline of how to integrate facilitating this intelligence feature into a subject teaching was not provided. For instance, in a language course, what was the sequence of connecting this feature with the units focusing on language skills and how much time was needed? Without this guideline, there was a danger of losing focus on developing language skills at the expense of managing this psychological area in a language course.

In conclusion, the above verb-forms of analytical, creative and practical thinking were too general to identify the relevant cognitive learning activities. The examples in *Intelligence Applied: Understanding and Increasing Your Intellectual Skills* (Sternberg, 1986) and *Applied Intelligence* (Sternberg et al., 2008) were not applicable. It was problematic to follow the descriptions or the examples in above source, *Teaching for Successful Intelligence: To Increase Student Learning and Achievement* (Sternberg and Grigorenko, 2000), to devise cognitive learning activities. My solution to the above difficulties was to select the most fundamental features of analytical, creative and practical intelligence in order to develop relevant lessons in this study. I selected the intelligence features and the focused parts of the definitions of these features based on the consideration of practicality of teaching in this research context.

3.3.3 Development of analytical lessons

Analytical intelligence was facilitated in both groups. The thinking skill of comparing and the process of problem-solving were major areas to develop in the analytical lessons.

(i) Lessons for reading

From Bloom's (1969) cognitive taxonomy, the thinking ability to compare is a foundational level for analytical thinking. As Sternberg and his colleagues in their descriptive literature (Grigorenko and Sternberg, 1997; Sternberg and Grigorenko, 2000) and empirical studies (Sternberg et al., 1998; Grigorenko et al., 2002) say, the task of making comparisons was selected to apply in this study. Comparing was also the major design of the textbook for the intervention. In all five prescribed reading chapters, the students were required to demonstrate their thinking ability to make comparisons, including:

- Presenting agreement or disagreement for a policy on medical resource distribution (Chapter One, *Mickey's Team*);
- Cause-effect analysis for the environmental issues (Chapter Four, *Silent Spring*);
- Comparing Polish versus Canadian and Chinese versus American cultures (Chapter Five, *What Is Lost in Translation*);

- Comparing job candidates and selecting the best candidate (Chapter Seven, *Going into Business)*; and
- Comparing two musicians (Chapter Nine, *the Cellist of Sarajevo*).

Other levels of analytical thinking, including analysis, evaluation and explanation, were also involved in these lessons. During the instructional process, the students were required to compare and evaluate their peers' work and presentations. The other applications from Sternberg and his colleagues' studies were time-line (Sternberg et al., 2001[15]), guided questions (e.g. Is there a problem?, Sternberg et al., 2001[16]) and WH questions (i.e. who?, what?, when?, where?, why?, Sternberg et al., 1998).

Furthermore, in order to have more time for triarchic lessons in teaching essay-writing, the students were expected to learn efficiently in reading. I suggested that they pre-study the reading passages in the textbook to achieve this goal. I only gave a guideline to instruct reading lessons. Nevertheless, I articulated that my teacher's role was not as a translator, nor as a walking dictionary to explain meanings of words for them. There was no Chinese translation or vocabulary explanation provided during class time. In contrast to the six-year experience in English secondary education, the students were required to demonstrate their independent reading ability.

From stage one to three, the instruction to reading was based on the design of the textbook. To redesign the original largely analytical lessons of this textbook into creative and practical approaches may have caused confusion from the students' perspective. Why the textbook they bought were not used to a significant degree?

The reading lessons were similar in both groups across three stages. The only change was that the number of reading exercises in the textbook was reduced in both groups in stage three. This gave more time for teaching the lessons in essay-writing, since developing triarchic lessons in this area was prioritised over that of teaching reading (see (ii) Constraints in 3.3.7).

(ii) Lessons for essay-writing

There were three aspects of developing analytical lessons for essay-writing:

[15] This citation refers to Sternberg, Grigorenko and Jarvin. (2001), rather than Sternberg, Castejón, Prieto, Hautamäki and Grigorenko. (2001).
[16] Same as footnote15.

(ii-i) Integrating with reading;
(ii-ii) Developing writing processes; and
(ii-iii) Facilitating analytical thinking.

(ii-i) Integrating with reading

The students were required to write three essays. The topics were:

- *A Story of Mickey Mantle* (a baseball hero in American sport history);
- *A Comparison between Cultures, Genders or Generations*; and
- *Living in the Year 2050* (in terms of the energy crisis).

I selected the topics to reinforce the reading contents of the textbook in the first two essays. In the first essay, *A Story of Mickey Mantle*, the students were required to write based on the information provided in Chapter One, *Mickey's Team*. In the second essay, the students were required to write *A Comparison between Cultures, Genders or Generations*. The reading passages in the textbook provided sufficient examples of comparisons. The third essay, *Living in the Year 2050*, was unconnected to the textbook, and was designed to involve imagination of the future life and thus creative thinking.

(ii-ii) Developing writing processes

In designing lessons for essay-writing, both the writing product and processes were emphasised. In order to produce the writing product of essays, the units of vocabulary and grammar in five instructional chapters established the students' basic language ability to write essays. In contrast, the lessons for developing the students' writing processes were lacking in the textbook. I therefore designed the following three parts to facilitate the students' writing:

- Formulating a central idea;
- Developing the body of the essay; and
- Adding an introduction and a conclusion.

Throughout the process of writing three essays, there were different focuses on the above three parts. The focus in the first essay was to formulate a central idea for an essay. In the second essay, a new focus was to develop the body paragraphs. Specifically,

I required the students to demonstrate their ability to present the following four levels of the basic writing structure in their essays:

- A central idea of an essay;
- A topic sentence in each paragraph to support the central idea;
- Ideas to support each topic sentence; and
- Details to support each idea.

In the third essay, the students needed to focus on adding an introduction and a conclusion in order to write the three parts described above appropriately. Furthermore, formulating a central idea and presenting the above four levels of writing structure were the basic requirements for essay-writing essays in order to maintain the minimum quality of writing products

In terms of developing writing processes, there were general procedures to accomplish one essay:

- Formulating a central idea;
- Organising ideas;
- Writing a draft; and
- Revising the draft.

The above first two steps were pre-writing tasks. The third step was a during-writing task. The fourth step was a post-writing task.

(ii-iii) Facilitating analytical thinking

I attempted to integrate the above steps with different features of problem-solving in order to facilitate the students' analytical intelligence. There are the six features of problem-solving in analytical intelligence (Sternberg and Grigorenko, 2000):

- Identify Problems;
- Allocate Resources;
- Represent and Organise Information;
- Formulate Strategies;
- Monitor Problem-solving Strategies; and

- Evaluate Solutions.

The investigation of one particular problem to be solved through a sequence of these six steps is the general practice of acquiring knowledge of problem-solving. This knowledge is a meta-cognition which informs how to solve another similar problem to a certain degree. However, the resource (e.g. video or tape recording for monitoring problem-solving strategies individually or in groups) for investigating this application was lacking in this research context. Also, time would be insufficient to apply all six steps of problem-solving in each of the four steps for essay-writing mentioned. It seemed unlikely to include twenty-four steps of problem-solving in order to complete one essay in an ordinary English course. Such application would have introduced two dangers. The teaching may lose focus on developing essay-writing ability at the expense of facilitating thinking skills. It would also be likely for the students to lose their interest in the writing process by such time consuming and reduplication of the six steps of problem-solving four times for one essay. It was necessary to select steps of problem-solving to be focused in facilitating analytical thinking during the processes of writing an essay.

Since problem-solving is a process of learning, I decided to expand the scope of this learning into the completion of an entire English essay. Therefore, the different parts of the process of essay-writing can be integrated with the selected steps of problem-solving. Among the four steps of writing process, writing a draft was the student's individual activity. There was no instruction for it. The other three steps were integrated into relevant features of problem-solving. These intelligence features were:

(ii-iii-i) Identify problems;
(ii-iii-ii) Represent and Organise the Information; and
(ii-iii-iii) Evaluate Solutions.

(ii-iii-i) Identify Problems

This feature was defined as:

> …to encourage students to formulate and ask questions, not just to answer them. Teachers should encourage students to pose what they see as fundamental questions… (Sternberg and Grigorenko, 2000, p.42)

This feature was selected to integrate with formulating a central idea of an essay because of the importance and inquiring nature of this feature. This feature is essentially more important than the other features of problem-solving. It provided a starting point for the students to think analytically. Also, this feature is defined as asking questions. In order not to lose focus on teaching essay-writing at the expense of facilitating this problem-solving feature, I did not guide the students to initiate their first problem to solve in essay writing. According to the above writing process, I informed them of the first problem—*What is the central idea of my essay*? It would be necessary to establish a solid foundation of this initial learning task in order to develop the following writing processes of an essay. In this fresh and necessary task, the students could be strongly motivated in learning asking questions. They may efficiently learn the most important feature—'Identify Problems' to a certain degree.

(ii-iii-ii) Represent and Organise the Information

This feature is defined as:

> …presenting and organizing information, helping students show their thinking in a concept map or outlines. (Sternberg and Grigorenko, 2000, p.46)

By definition, this feature was directly applied in the step of organising ideas in the writing process which required organising information in a logical way.

(ii-iii-iii) Evaluate Solutions

This feature is defined as:

> …explicitly asking students to comment on the strengths and weakness of their own work and that of others and emphasize the constructive critiques. (Sternberg and Grigorenko, 2000, p.51)

This feature was selected to relate to the step of revising the draft of an essay because of their common purpose. The purpose of both revising the draft in the writing process and evaluating a solution was to make progresses. In writing each of three essays, the

student acquired feedback from their writing partners (i.e. other students who were paired by the students themselves). They also obtained my comment and wrote a self-evaluation after completing each essay.

In stage one, only the basic writing structure, writing process and the concept maps, which facilitated the 'Represent and Organise Information' feature, were introduced. In stage two, the 'Identify Problems' and 'Evaluate Solutions' features were more explicitly facilitated. In stage three, the requirement of writing a self-evaluation for each of three essays was added to reinforce the 'Evaluate Solutions' feature. The students might learn how to making progress from the first to the third essay in this successive self-evaluation. Also, in the writing structure of an essay, the third level of support for topic sentence (see (ii-ii) Developing writing processes) was added in order to increase the clarity of my instruction. In stages one and two, the students were required to write four essays. In stage three, the number of essays was decreased from four to three in order to reduce the intensity of this course.

The students' meta-cognition of problem-solving might have been fragmental in the above application. However, their thinking facilitated by the integration between the above selected feature of problem-solving and the essay-writing processes was analytical because the logical thinking was emphasised.

3.3.4 Development of creative lessons

As mentioned earlier, it was found difficult to adopt examples from the source of *Teaching for Successful Intelligence: To Increase Student Learning and Achievement* (Sternberg and Grigorenko, 2000). Another particular difficulty in developing creative lessons was to select the appropriate features from a great number—twelve features of problem-solving in creative intelligence:

- Redefine Problems;
- Question and Analyse Assumptions;
- Generate Ideas;
- Model Creativity;
- Sell Creative Ideas;
- Recognise the Two Faces of Knowledge;

- Identify and Surmount Obstacles;
- Take Sensible Risks;
- Tolerate Ambiguity;
- Build Up Self-efficacy;
- Uncover True Interest; and
- Delay Gratification.

Nevertheless, in the Literature Review (see (ii) Creative intelligence in 2.2), the novelty of creative thinking is the distinctive feature from analytical and practical thinking. Therefore, novelty was applied as a focus of creative lessons and two features from the above list were selected:

(i) Generate Ideas; and
(ii) Sell Creative Idea.

The relationship of these two features with novelty follows.

(i) Generate Ideas

New ideas are likely to be produced in the demand for generating as many ideas as possible. As novelty was defined as an essential aspect of creative intelligence, producing new ideas was applied to design creative lessons.

(ii) Sell Creative Ideas

This feature is suggested as:

> Students need to learn how to persuade other people of the value of their ideas. (Sternberg and Grigorenko, 2000, p.62)

This feature involved the exchanges of ideas among the students. Their creative thinking tended to be facilitated by obtaining new ideas from each other.

From the literature, I applied ‘create’ and ‘imagine’ (see Table 6), unexpected questions (Sternberg and Grigorenko, 2000) and visual imagination (Brasseur, 1993; Dart, 2001) to this study.

3.3.4.1 *Stage one*

In contrast to the traditional, analytical teaching approach, I felt it important to investigate the appropriateness of the novel, creative teaching approach in this initial stage. Thus, I would be able to make a sensible decision as to whether to develop further creative lessons.

My teaching and the students' learning in stage one will now be described.

(i) My teaching

There was only one participant group in this stage. I taught a few creative tasks as a pilot study. A reading passage of producing creative ideas was given to the students in order to encourage them to participate in the task of brainstorming. I then presented the three pictures to the students:

- One dot;
- One dot on a straight line; and
- Three dots lined up on a straight line.

In small groups, the students were required to produce as many ideas as possible to describe these pictures.

(ii) The students' learning

This task facilitated the 'Generate Ideas' feature (Sternberg and Grigorenko, 2000, p.66). Through this task, the students' English vocabulary was meaningfully and efficiently recalled. Their vocabulary was possibly enlarged by the new words given by their peer group members. The above tasks took approximately two periods (i.e. fifty minutes per period). By observing enjoyment and excitement among the students during these tasks, I ensured the appropriateness of developing further lessons for creative thinking.

3.3.4.2 *Stage two*

My teaching and the students' learning in stage two are as follows.

(i) My teaching

There were two participant groups. Only the triarchic group experienced the creative lessons. These creative lessons were:

(i-i) Creative writing; and

(i-ii) Inner-voice theatre.

(i-i) Creative writing

The task of creative writing consisted of two levels. The basic level took approximately two periods. The students were instructed to write short responses to the following four unexpected questions:

- Why is the sky blue?
- Why is the university closed tomorrow?
- Why is there a rainbow after rain? and
- Why are the eyes the windows of the soul?

The advanced level of creative writing also took approximately two periods. The students were taught to brainstorm and write a poem or story with the following pictures:

- Dots;
- Curved lines; and
- Scribbles.

The three pictures used in stage one (see (i) My teaching in 3.3.4.1) were replaced for the reason of simplicity.

Firstly, the second and the third pictures in stage one involved the combination of elements. The second picture combined the dot and a straight line. The third picture combined dots, a broken line of three dots and a straight line. Secondly, dots overlapped the three pictures. Lines overlapped the second and third pictures; there was a straight line in the second picture, and a straight line and a broken line of three dots in third picture. The above elemental combination and overlapping could have introduced confusion for the students in identifying things to be represented by these pictures.

In contrast, the three pictures used in stage two were simpler. Each of them consists of only one element without overlapping element between pictures. With this simplicity,

the above confusion was avoided. Also, the students were left more thinking space to imagine things because of the fewer elements in each picture in stage two than in stage one.

Another part developed from stage one to two was the integration of creative writing to instructional content. The students were required to select one from the three pictures in stage two to represent a theme from a reading passage in the textbook. They then accomplished the task of writing a poem or creative story for this theme using the picture selected. This task also integrated two types of intelligence tasks: the analytical reading and creative writing.

(i-ii) Inner-voice theatre

This task was a following-up activity after a reading lesson. It took one period for each of the chapters, *Silent Spring* and *What is Lost in Translation?* Altogether, approximately two periods of inner-voice theatre were exercised. The same procedures were applied between two chapters. The students read a reading passage. Then, they were required to brainstorm to create short written dialogues within the contexts of reading, selecting actors/actresses, rehearsing and performing the dialogues.

The principle of positive thinking was emphasised during their group work. In order to manage nine groups taking turns to perform their dialogues within one period, I used the following techniques to increase the efficiency of classroom management:

- Making the most use of classroom space as a circular theatre and locating each small group in a space to rehearse and perform;
- Avoiding the necessity to memorise the script in English by suggesting posting the written scripts on the wall near the space for each small group;
- Moving the microphone so that the students could take turns to perform their scripts in their spaces;
- Limiting the presentation duration to a few minutes to retain the students' attention; and
- Using the strategy of voting on performance to engage the students' attention.

(ii) The students' learning

In terms of creative thinking, two creative intelligence features were facilitated. Firstly, the 'Generate Ideas' feature was facilitated in the group activity of brainstorming as it was in stage one. Secondly, the 'Sell Creative Ideas' feature was facilitated. The students were required to present their ideas within a small group and then selected a few of ideas to present to the entire class. They needed to communicate their creative ideas inside the small groups and in the presentation in front of the entire class. Through these processes, they attempted to persuade their peers of the value of their creative ideas. The strategy of voting for the best poem or story reinforced the persuasion.

In terms of learning English reading and essay-writing, through the above writing activity, the students' reading comprehension could be deepened. The English they learnt from reading passages could be applied in writing their dialogues. In stage one, the students produced creative ideas in the form of giving names to things to represent pictures. In contrast, the English language they were required was extended in stage two. They wrote phrases or short sentences for unexpected questions. Furthermore, they wrote poems or stories for a reading theme with picture imagination. Also, the techniques of brainstorming and visual imagination were expected to be applied in writing an interesting introduction to essay three.

3.3.4.3 *Stage three*

My teaching and the students' learning in stage three are as follows.

(i) My teaching

The instructional content and the design of learning tasks remained similar as those in the stage two. The large portion of similar creative lessons between stage two and three could clarify whether the similar effects upon the students' learning could be replicated from stages two to three.

The only added part of creative writing was to assess the creative writing in order to increase the level of challenge. This part took approximately twenty minutes. I gave three standards by which the students could assess the creative writing of their peers:

- Interesting;
- Meaningfulness; and

- Novelty.

Since I acquired the teaching experience of creative lessons in stage two, I was more familiar with these lessons in stage three. I therefore monitored the small groups more attentively, provided more help to individuals and more skillfully utilised the following instructional strategies:

- Positive thinking;
- Use of language;
- Gradual developments;
- My teacher-researcher attitude;
- Clarification;
- Prior knowledge;
- Modeling creativity; and
- Explanation.

Positive thinking

Before the brainstorming task, I gave guidelines regarding an attitude in discussion. I emphasised positive thinking which avoided negative feedback throughout small group discussions.

Use of Language

As foreign language learners, the students were encouraged to write their creative ideas in English, regardless of the simplicity of their English. I also allowed them to write down their ideas in Chinese at the initial stage. However, in the final stage, they were required to produce creative writing in English. The students self-regulated the amount of Chinese they wished to use from the initial stage and when to write in English alone during the lesson.

Gradual development

This strategy was exercised in four aspects.

Firstly, the basic level (i.e. unexpected questions) was taught in the eighth week and the advanced level (i.e. visual imagination) was taught the twelfth week. This time-line helped the students to adjust to new learning experiences. The students had

accommodated the lessons for analytical intelligence approximately two months before they started to learn the new task of the creative lessons. There was also a period of one month for the students to develop their creative thinking from the basic to advanced level.

Secondly, the above four questions were arranged from the general aspect (i.e. Why is the sky blue?) to the context-specific aspect (i.e. Why is the university closed tomorrow?); and from the general aspect (i.e. Why is there a rainbow after rain?) to the reflective aspect (i.e. Why are the eyes the windows of the soul?)

Thirdly, the levels of challenge were increased by shortening the amount of the time given to complete writing tasks and increasing the number of creative ideas to be produced.

Fourthly, the intensity of group dynamics was decreased from small groups, to pairs, to individuals in the writing task of four expected questions.

My teacher-researcher attitude

I took the attitude of ignoring the students' mistakes and accepting their uncreative ideas. I adopted their suggestion of changing to write about one particular university instead of their own university in the question of *why is the university closed tomorrow?* I encouraged the students by:

- Showing my confidence in their creative thinking ability before the lessons;
- Guiding them to recognise their enjoyment during the creative activities; and
- Acknowledging their performance of creative thinking after the lessons.

Clarification

I clarified a misconception that low English proficiency made it difficult to think of ideas. On the contrary, I encouraged the students to focus on thinking of ideas, rather than worrying about their English proficiency. This clarification and encouragement was more important in the writing task with visual imagination. This task was more challenging because the students were required to produce more substantial content (i.e. a poem or story) than write unexpected questions. The students also seemed more

worried about their English proficiency in this task.

Prior knowledge

Before the brainstorming task, I activated prior knowledge. I asked the students to define creativity in order to orientate their thinking to an appropriate path to creative thinking. Through discussion, the students were aware of novelty as the essential element in creative thinking. They also understood that creativity should be sensible in order to be distinctive from nonsense.

Modeling creativity

When the students presented their ideas, I modeled creativity. I identified the contributory elements in their creative writing. I also provided my own creative ideas about and the alternative perspectives on the same unexpected question.

Explanation

The students were encouraged to give an explanation of their creative ideas to clarify these ideas from nonsense. For instance, in the question of why is the sky blue, one written response was that the sky wants to make a friend with the ocean. An explanation was that the sky and the ocean could therefore connect with each other because they share a colour.

In conclusion, the non-threatening environment was crucial to establish successful learning experiences in creative thinking, particularly for the inexperienced thinkers. The above first five strategies were adopted to establish a non-threatening learning environment.

(ii) The students' learning

Similar to stage two.

3.3.5 Development of practical lessons

As in developing creative lessons, there were difficulties in adopting examples from literature and in selecting features of practical intelligence to be focused on in lesson planning. The nineteen features of practical intelligence were the removals of the following barriers (Sternberg and Grigorenko, 2000):

- Lack of Motivation;
- Inability to Control Impulse;
- Fear of Failure;
- Too Much or Little Self-confidence;
- Inability to See the Forest through the Trees;
- Misattribution of Blame;
- Distraction and Lack of Concentration;
- Spreading Oneself Too Thin or Too Thick
- Using the Wrong Ability;
- Lack of Balance among Analytical, Practical and Creative Thinking;
- Excessive Self-pity;
- Excessive Dependency;
- Wallowing in Personal Difficulties;
- Inability to Translate Thought into Action;
- Lack of Product Orientation;
- Lack of Impulse Control;
- Lack of Perseverance and Ability to Control Perseveration;
- Inability to Complete Tasks and to Follow Through; and
- Procrastination.

The distinctive aspect of practical intelligence from analytical and creative intelligence is the contextual aspect. This aspect requires managing everyday tasks (Sternberg et al., 2000). Designing lessons for practical intelligence in this research context was particular challenging.

Firstly, the lessons for practical lessons were planned to teach within the classroom scenario but attempted to facilitate the students' practical intelligence, which tended to involve their living contexts. The original constructs of practical intelligence were from occupations (Sternberg and Horvath, 1999), rather than a classroom.

Secondly, most of the above nineteen features of practical intelligence (Sternberg and Grigorenko, 2000) involved all cognitive, affective and conative aspects. A consolidating process and long-term development on an individual basis could be necessary.

For these two reasons, the lesson planning for practical intelligence in this study was extremely constrained within the research context of the classroom. In order to obtain the broad viewpoint which includes all three types of intelligence from the Triarchic Theory of Intelligence (Sternberg, 1985), I attempted to design lessons for practical intelligence regardless of the above difficulties.

3.3.5.1 *Stage one*

My teaching, the students' learning and my decision on lesson planning in stage one are described as follows.

(i) My teaching

By reflecting on my former teaching experience, I eventually perceived time management was a common problem the students needed to solve in their everyday life context. Time management would also be influential to the students' learning and thus their learning outcomes in this study. Among the above list of practical intelligence, the 'Scheduling Accordingly' feature is defined as:

> Students need to get a sense of what constitutes a reasonable distribution of commitments… (Sternberg and Grigorenko, 2000, p.111)

There are instructional ideas for subjects.

In *Language Arts*:

> …to avoid extra English club activities when they [i.e. students] are already involved in a poetry group and a book club, as well as being full-time students. (Sternberg and Grigorenko, 2000, p.111)

In *Mathematics*:

> …to schedule enough time to read assigned material, complete homework and check their answers. (Sternberg and Grigorenko, 2000, p.111)

In *Social Science*:

> …to set priority for the clubs they are interest in joining and then participate in only a small number of organisations so they can be actively involved in each one of them. (Sternberg and Grigorenko, 2000, p.111)

In *Music*:

> …decide how much time they should spend practicing each part of a demanding musical challenge to be ready to present their progress to their teacher in a week. (Sternberg and Grigorenko, 2000, p.111)

In synthesis, the above definition and instructional ideas are mainly time management. Therefore, time management was defined as a lesson for practical intelligence as a pilot study in stage one. Since time management was not naturally integrated in an English course, this lesson was as brief as possible. I orally instructed the student in the importance of time management. This instruction was approximately twenty minutes. Then I gave the students a blank timetable with hourly slots and required them to fill in these slots for one week as an optional project.

(ii) The students' learning

Only some of the students handed in the above timetable. However, in the post-intervention interviews, seventeen of twenty (81%) interviewees identified the importance of time management.

Some of them also illustrated the time they spent:

> …what cost our time a lot, chats, right! And eating, just often eating for very long time [i.e. eating and chatting with friends during a meal]… (Post-interventional interview of stage one, Student A, January 6, 2005)

Also, the students' need for time management was written in my teacher-researcher diary:

> It would be helpful to teach the students about time management, … (My teacher-researcher diary of stage three, October 16, 2004)

Synthesising the above data, my prediction of the need of time management in the students' study life was proved correct. It seemed that the awareness of the importance of time management was established in stage one. Also, some of the students expressed that they experienced benefit from the information given regarding time management:

> S: … blank timetable, very useful. (Post-intervention interview of stage one, Student B, January 5, 2005)

However, the influence of time management upon the other students and their competence in time management remained unknown.

(iii) My decision

After becoming aware of the importance of time management from stage one, I decided to give the above guidance to both groups before the intervention in stage two. With this awareness, it became ethical for me as a teacher-researcher to ensure that all of my students had adequate learning experiences. The time management lesson was defined and included in the general aspect of extending interventional influence in stage two (see details in 3.1 (3)-2 Attempts to extend the intervention). Without giving this lesson, the learning outcomes might have been influenced by different levels of time management, rather than the curricular intervention.

3.3.5.2 *Stage two*

My teaching, the students' learning, recategorisation of learning tasks and my decision in stage two are as follows.

(i) My teaching

The direction of lesson planning for practical intelligence was changed from the students' life environment into an attempt to integrate the lesson with English teaching. Having not found detailed lessons in the previous study of literature, I searched the literature again for a definitional description of practical intelligence in order to apply the description in my lesson planning. The following description of practical intelligence was in Level Two of the scoring scheme from the Sternberg's team:

> …to incorporate new knowledge while taking contexts into account. (i.e. 'if-then' reasoning is evoked, PACE Center, 2009)

Based on this description, I designed the task of thinking in contexts with the aim of exploring the students' thinking in multiple perspectives. This task was applied in a unit of clarifying the misconceptions of learning English in Taiwan. The triarchic group was instructed to discuss the relevant issues in the three contextual aspects:

- Who will say this viewpoint?'
- Who will believe it? and
- Why will they believe it?

This lesson took approximately one period.

Another application of thinking in contexts was a follow-up activity after a reading lesson. This task also took approximately one period. Firstly, the students read a passage on a controversial issue. The issue was to prioritise medicinal resources by computer programming rather than by a discussion among human beings. Secondly, they were required to think according to one of the fourteen roles (e.g. computer engineer, doctors, patients and school teachers) within the above context, and write short dialogues. Thirdly, they were asked to present the ideas from their dialogues in the form of a debate. This lesson was an attempt to integrate two types of intelligence: analytical thinking in reading and practical thinking in writing.

(ii) The students' learning

The above task integrated reading comprehension and writing meaningful dialogues. By thinking in contexts, the students reflected the meanings of the reading passage contents and enhanced their reading comprehension. Their motivation for writing could be increased after meaningful reading. The English they learnt from the passages could be used when they wrote dialogues. For the purpose of persuading others in the final part of this lesson—debate—the students were expected to think as practically as possibly within the context mentioned.

(iii) Recategorisation

After further reflection upon the nature of the task of thinking in contexts, I understand what was misleading in the Sternberg's team's publications. The lessons on thinking in contexts were re-categorised from practical to analytical intelligence. The above attempt to integrate two types of intelligence in a lesson failed.

It seems that defining practical intelligence was even difficult for Sternberg's team. Action-orientation (Sternberg, 1997) of tacit knowledge, which is 'an aspect of practical intelligence' (Sternberg et al., 2000, p.104), is not explicit in the scoring scheme of practical intelligence of Sternberg's team from the above Level Two (see (i) My teaching) and the following Levels Four and Five.

Level Four is:

> …to formulate a convincing explanation of why the information obtained has (or does not have) a practical value. (PACE Center, 2009)

Level Five:

> Tasks at this level assume assimilation and its transformation so that students can clearly express his or her position and advise someone else in a situation resembling (but not identical) the one in the item. (PACE Center, 2009)

Some descriptions of these levels, such as reasoning (Level Two), explanation (Level Four), expression (Level Five) and advice (Level Five) are problematic or ambiguous in their position between analytical and practical intelligence. Also, there is a danger of misleading the categorisation of the tasks into practical intelligence without discerning their lack of action-orientation as in this study.

Also, a typical lesson for practical intelligence from Sternberg's team was the task of planning (Grigorenko et al., 2002). However, planning also involves both analytical and practical thinking, and possibly creative thinking. It seemed that there is little discussion on these aspects in the publications from Sternberg's team. The task of planning involved the difficulty of being categorised into types of intelligence and was

inapplicable in this study.

Since the instructional design lacked appropriate examples of practical intelligence, I expected to find a further clue for the assessment of practical intelligence when designing lessons. A typical task for assessing practical intelligence in Sternberg's team's publications was to apply a certain theory in daily life (e.g. the implications of Freud's theory of dreaming for your life, Sternberg et al., 1996). However, this involved two problems.

Firstly, such application could not be exercised without analytical thinking. The distinction between analytical and practical thinking in this application should be clarified before the influence of practical thinking could be certain.

Secondly, there was a discrepancy between the written response to the above test item and the genuine competence of solving practical problems. The written response to the tests could be either imaginative prediction or practical knowledge. This type of knowledge often involved the test taker's or others' experiences of solving practical problems. Without ascertaining the relevant experience involved, the written responses to the test could not substantially indicate the competence of solving practical problems.

Furthermore, solving practical problems involved:

- The context which was interwoven with various social-cultural factors; and
- Different approaches between individuals to solve the same problem.

The constraint of paper-pencil tests was not the only difficulty in concluding that the shared knowledge corresponds to social-cultural factors; but also the ignorance of individual approaches to the same problem. It should be noted that the knowledge of practical intelligence acquired by the Sternberg's teams (Sternberg et al., 2004; Sternberg and The Rainbow Project Collaborations, 2006) was only a part of the story. Owning the practical knowledge did not guarantee the knowledge owner had the competence to solve the practical problems. It seemed that this constraint could only be resolved by dynamic assessment (see (iii) Practical intelligence in 2.2).

After the above searching of the definitional description, its typical learning task (i.e.

planning) and its typical task of assessment (i.e. applying a theory to solve a practical problem), I could not find any information applicable to this study. Designing lessons for practical intelligence was much more difficult than I had expected. There were three issues involved:

(iii-i) Definition;
(iii-ii) Scope to observe; and
(iii-iii) Relevant cognitive activities.

(iii-i) Definition

The first issue is definitional; whether practical intelligence is a type of thinking skill (Sternberg and Grigorenko, 2000), attitudes (Sternberg, 2002) and whether practical intelligence necessarily includes the aspect of competence (Sternberg, 1997) were unclear in the contemporary literature. The difficulty in defining practical intelligence may involve its inevitable overlap, by its nature, with analytical intelligence. Logically, practical problems cannot be solved without exercising analytical thinking.

(iii-ii) Scope to observe

The second issue was the difficulty in defining the scope to observe practical intelligence. The students' response towards the analytical and creative lessons could be observed within a unit of classroom task. In contrast, it seemed inappropriate to observe practical intelligence within a classroom. By definition, practical intelligence is the ability to solve practical problems (Sternberg et al., 2000). The practical problems emerged within contexts, which are unlikely to be reconstructed in the classroom.

(iii-iii) Relevant cognitive activities

The third issue was to design relevant cognitive learning activities for practical intelligence. This was related to the definitional difficulty mentioned. In the teaching approach to intellectual development, the relevant cognitive operations need to be identified. Thinking skills in analytical intelligence comprise the six steps of problem-solving. Thinking skills in the creative intelligence are brainstorming and visual imagination. The relevant lessons can be designed and exercised. In contrast, the complexity of practical intelligence introduces the difficulty of defining thinking skills for this intelligence. The so-called thinking skills involved in practical intelligence (Williams, Blythe, White, Li, Gardner and Sternberg, 2002) is actually analytical

thinking from a practical perspective. A perspective is not a thinking skill! This perspective involves a broader view of understanding, decision-making and possibly the ethical aspect of solving problems in practical life.

With the above knowledge of the difficulty of designing lessons for practical intelligence, I accepted my failure of the relevant design. Through the trial and error process and reflections, I was able to discern the weaknesses of contemporary relevant studies led by Sternberg, the founder of the Triarchic Theory of Intelligence (Sternberg, 1985). Without going through the struggle to overcome the above difficulty, my critical understanding of the nature of practical intelligence may not have been substantially acquired.

(iv) My decision

It seemed that the further attempt to develop a lesson for practical intelligence could endanger this study by losing the focus on developing meaningful English lessons for the students. Thus, at the end of stage two, I abandoned the attempt to develop an lesson for practical intelligence. The attempt to develop triarchic lessons in this study was therefore constrained into the investigation of the influence between the analytical and creative teaching approaches. The research questions in stage three were changed to:

1. To what extent am I, as an English teacher, able to draw upon the creative and analytical teaching approaches to devise meaningful learning activities?
2. How will the students respond to these learning activities?

The summary of analytical, creative and practical lessons across the three stages, including the relevant inquiries, action and decision-making are in Table 7.

Table 7: The Development of Lesson Planning

1. The number with brackets after the description indicates the response to the same number of inquiry under the column of task (e.g. In analysis lesson, focus on comparison (1) indicates 'focus on comparison' was the response to inquiry 1: How to define the relevant tasks from the massive structured Triarchic Theory of Intelligence (Sternberg and Grigorenko, 1985)?)
2. – indicates nothing

Lesson Planning				
Stage	**Task**	**Analytical**	**Creative**	**Practical**
I	Inquiry 1	How to define the relevant tasks from the massive structured Triarchic Theory of Intelligence (Sternberg and Grigorenko, 1985)?		
	Action	Defining the essential element from the sub-theory	Defining the essential element from the sub-theory	Defining the essential element from the sub-theory
	Decision	Focus on comparison (1)	Focus on producing novelty (1)	Focus on consideration in a practical life (1)
	Inquiry 2	--	Was this new creative task appropriate to these students?	Was this new practical task appropriate to these students?
	Inquiry 3		--	How to design a task instructed in the classroom scenario but relate to the students' life experiences in order to facilitate their practical intelligence to a greater extent?
	Action	1. Following reading exercises in the textbook 2. Introducing the basic writing structure of an essay	Brainstorming with visual aids to generate ideas (2)	Taking examples in publications (3)
	Decision	--	--	Integrating the features of practical intelligence (Sternberg and Grigorenko, 2000) to classroom teaching (3)
	Inquiry 4	--	--	How to adopt the practical intelligence features to fit the classroom practicality?
	Action			Selection of intelligence features
	Decision			Focus on: Time management (4)
	Action			Giving a brief guideline and optional one week project of time management
	Instructional goals	Integration: Reading Comprehension	Beyond (the prescribed goals): Arousing the students' motivation towards writing	Beyond (the prescribed goals): Becoming a mature learner
	Reflection	--	Ensuring the appropriateness because of positive responses among the students (2)	Ensuring the appropriateness because of positive responses among the students (2)

	Inquiry 5		--	Was it is ethical to instruct time management for only triarchic group?
	Decision		1. Maintaining the task of brainstorming (2) 2. Developing creative lessons (2)	1. Instructing time management to both groups for the ethical reason (5) 2. Design a new task of practical intelligence (4)
II	Inquiry 6	How to integrate the analytical approach to teaching essay-writing?	How to integrate the creative approach to teaching English reading or essay-writing?	How to integrate the practical approach to teach English reading or essay-writing?
	Inquiry 7	How to develop analytical thinking into aspects or levels?	How to develop creative thinking into aspects or levels?	--
	Action	Taking examples in publications (6 and 7)	Taking examples in publications (6 and 7)	Taking examples in publications (6)
	Decision	Integrating the features of analytical intelligence (Sternberg and Grigorenko, 2000) to teaching essay-writing (6 and 7)	Integrating the features of creative intelligence (Sternberg and Grigorenko, 2000) to creative writing and reading comprehension (6 and 7)	Applying the description of the scoring scheme from the publication of PACE (6)
	Inquiry 4	How to adopt the analytical intelligence features to fit the classroom practicality?	How to adopt the creative intelligence features to fit the classroom practicality?	--
	Action	1. Selection of intelligence features (4) 2. Adopting the appropriate part of definition of an intelligence feature in teaching (4)	1. Focus on producing novelty (4) 2. Selection of intelligence features (4) 3. Adopting the appropriate part of definition of an intelligence feature in teaching (4)	Selecting Level Two of the practical intelligence in the above scheme to apply in teaching
	Decision	Emphasis on: 1. Identify problems 2. Represent and Organise information 3. Evaluate solutions (4, 6 and 7)	Emphasis on: 1. Generate ideas 2. Sell creative ideas (4, 6 and 7)	Emphasis on: Consideration in a contextual aspect (4 and 6)
	Action	Developing strategies, concept map and self-reflection report for each essay (4, 6 and 7)	1. Developing creative writing for unexpected questions and with visual imagination 2. Connecting a theme of reading passage to creative writing 3. Developing a role-play task of the inner voice theatre based on reading texts (4, 6 and 7)	Design a task of thinking in contexts for a discussion (4 and 6)
	Instructional goals	Integrating analytical thinking in teaching essay-writing	1. Integrating creative thinking in teaching reading comprehension and writing an creative introduction to essay-writing 2. Beyond (the prescribed goal): Arousing the students' motivation towards English	Integrating practical thinking in facilitating reading comprehension and writing dialogues

			writing	
	Inquiry 8	--		Whether the thinking in contexts a practical or analytical task?
	Action			1.Searching further literature 2.Recognisng the misleading from the publication from PACE
	Decision			1. Categorising the thinking in contexts into analytical intelligence (8) 2. Abandoning the lesson planning for the practical intelligence 3. Change the research questions into comparing analytical and creative teaching approaches
III	Inquiry 9	How to refine the teaching?	How to refine the teaching?	--
	Action	1. Giving an illustration of the writing structure 2. Reducing irrelevant tasks (9)	Monitoring the task of creative writing in small groups more attentively and provided more help to individual the students (9)	
	Inquiry 10	How to extend the curricular differentiation between two curricula?	How to extend the curricular differentiation between two curricula?	
	Action	1. Differentiate requirement between two groups in essay three (10) 2. Requiring the creative group, rather than the analytical group to integrate creative writing in reading comprehension (10)		
	Inquiry 11	--	Whether the role-play task of inner-voice theatre is a creative or practical task?	
	Action		Analysing the tasks by the features of both creative and practical intelligence (Sternberg and Grigorenko, 2000), (11)	
	Decision		Categorising the inner-voice theatre into practical intelligence (11)	
	Instructional goals	Same as in the Stage Two	Same as the Stage Two	

3.3.6 Time for self-study

As a counterpart to creative and practical intelligence tasks, time for self-study was given only to the analytical group. There were five sessions of self-study in the fourth, seventh, twelfth (two sessions) and thirteenth weeks. The time for self-study was the time left after teaching analytical lessons. The length of self-study varied between fifty minutes (two sessions), thirty minutes (two sessions) and seventy minutes.

In all sessions, I encouraged the students not to talk to each other and to seek help from me, rather than their peers. In the first two sessions, I applied the following strategies to instruct the students to use the time in the learning tasks:

- Arousing awareness of the need for time management by listing all tests to be prepared for and all assignments to be accomplish;
- Suggesting firstly finishing the exercises in the textbook which had just been covered in the sessions before self-studies, in order to absorb the contents efficiently;
- Walking around among the students to monitor the learning-relevant behaviours; and
- Asking each student to indicate the number of tasks accomplished at the end of self-study time.

In the last three sessions, I had the students establish their own goal for the time used, but followed the last two of the above strategies.

3.3.7 Intervention

There were three parts to this section:

(i) Reasons for choosing the intervention course;
(ii) Constraints; and
(iii) Attempts to extend the intervention.

(i) Reasons for choosing the intervention course

Freshmen English, the only compulsory English course in higher education in Taiwan, was selected to be the intervention course. There were two parts to this course; each part lasted for one semester. I chose the part covering reading and writing, rather than

listening and speaking for three reasons.

Firstly, I realised from my early teaching experience that Taiwanese students were focusing on rote learning at the expense of a more intellectual approach. The area of reading and particularly writing is likely to convey more knowledge-based content than that of speaking and listening. Therefore, this area tends to have a higher intellectual demand and is more appropriate to develop the teaching approach to intellectual development.

Secondly, the aim of reading and writing is to facilitate the students' thinking on an individual basis. In contrast, that in listening and speaking involves two-way communication with others. This dynamic suggests a greater difficulty in cultivating and investigating the students' thinking experiences than those in reading and writing.

Thirdly, the data to be collected in the students' performance of reading and writing are mainly written words. Comparatively, the observation in listening and speaking involved audio data which is more difficult to obtain and analyse.

(ii) Constraints

The amount of time for the intervention was reduced by unavoidable non-instructional learning activities. In the third and final stage of this study, the semester from September 2005 to January 2006 included approximately eighteen weeks of three-hour lessons. However, in the first week, the department conducted a placement language test and an orientation programme for introducing the marking scheme and language resources in libraries. In the second week, both participant groups had no classes. The department conducted the same tasks for other classes. It also announced which of the advanced, intermediate and basic levels was assigned to each student. In the third week, the students took two pre-tests. In the penultimate week, the students spent time on writing semester reflections on the intervention. In the last week, the students took two post-tests. Also, the midterm test, national holidays and a sports event organised by the university all took time from the intervention. The intervention eventually lasted approximately thirteen weeks. Approximately, from a potential fifty-five hours during the eighteen weeks of the semester, eighteen hours (33%) were lost in the creative group and seventeen hours (31%) were lost in the analytical group (see Table 8):

Table 8: Time allocated to non-instructional versus Instructional learning activities

Non versus Instructional Learning Activities		Creative Group	Analytical Group
Non-Instructional learning activities	**Orientation**	3	3
	Waiting for other classes	3	3
	Pre-tests	3	3
	Writing reflection paper	1	1
	Finals	3	3
	Midterm	1	1
	Sport	2	1
	Holiday	2	2
	Subtotal	18 (33%)	17 (31%)
Instructional learning activities		37 (67%)	38 (69%)
Total		55 (100%)	55 (100%)

Notes:
1. The unit is a period of fifty minutes in the Taiwanese higher education system.
2. The numbers of periods which were lost for the weekday sports event were different between the two groups. One day of the event was a weekday on which the creative group had two periods and the analytical group had no classes. The other day of the event was a weekday on which the creative group had no classes and the analytical group had one period.

Furthermore, in contrast to the above static class time, the students played a dynamic role in transforming the nature of the intervention. From pre-intervention interviews, I perceived a need to change the students' perspective on learning English reading and writing, which were unduly influenced by national testing. Some of the students think that they learnt almost nothing in reading but to prepare for tests in their secondary English education:

> S: Reading? No learning. …
> T: What did the teacher teach you?
> S: Nothing….
> …
> S: …read test items [the test drills attached at the end of each reading passage] first and then find the answers…not really understanding the meaning of the readings. (Pre-intervention interview of stage three, Student A, September 20, 2005)

Reading was the major area of four language skills (i.e. listening, speaking, reading and

writing). However, it seemed that the above test-drills were common practice in secondary English education. However, the portion of this practice could be different among instructions from different teachers and self-learning processes among individual students. Through the test drills, the students still had a lot of experience of reading in English. However, the different levels of genuine reading comprehension among individual students are predictable.

The students' perspective on learning English writing also seemed to be distorted prior to this study. A student illustrated how the use of multiple-choice in the national test paralysed his spelling ability, which is foundational to develop the ability to write:

> S: …as I memorised vocabulary, just recognised the meaning of words. My spelling? I could not spell, so I could not write in words… (Pre-intervention interview of stage three, Student B, September 19, 2005)

Many of the students expressed that their writing experience in secondary English education had been directed towards free writing:

> T: What would you write in different paragraph?
> S: Just write as you wished. (Pre-intervention interview of stage three, Student C, September 22, 2005)

Some of them described that the instruction in English writing lessons was vague:

> S: He/she [i.e. the secondary English teacher] probably told us…Just the first and last paragraph need to be strong.
> T: How about what and how to write…?
> S: Just, instructed? No [instruction]. (Pre-intervention interview of stage three, Student D, September 19, 2005)

The most common strategy for teachers to assist the students in passing national tests in the area of writing might be memorisation:

> S: …Just memorise model sentences,…Memorised a lot, input different

> model sentences in different [types or topics of] essays…
> (Pre-intervention interview of stage three, Student E, September 26, 2005)

Before the intervention, about a quarter of the students in both groups reported that they did not find the experience of learning English interesting:

> S: Learning English, something interesting? Hum (thinking), nothing particularly interesting. (Pre-intervention Interview of stage three, Student F, September 23, 2005)

The first year of higher education is the most critical period to rediscover interest in learning English and remedy the negative experience of rote learning. From the above students' need to continue their English education, I made two decisions in an attempt to facilitate their further learning in English.

Firstly, the development of the students' ability to write English essays is prioritised over their ability in reading comprehension. The appropriate reading instruction may not be given to a satisfactory degree in the students' secondary education. However, the students' most familiar and developed language skill is probably reading, although the test drills seem to be dominant in their reading experience. Thus, giving instructions to establish their ability to write was comparatively more necessary.

Furthermore, the prescribed instructional contents mostly facilitated the analytical thinking in the design of the textbook. Only one task involved imagination in understanding figurative language (e.g. I heard music through my skin) of creativity. There were no lessons utilising practical intelligence. These instructional contents were also the contents of two final tests, which were in multiple-choice format and counted as forty percent of the final mark. The students were anxious to pass the final tests. This anxiety might cause them to perceive that redesigning the lessons of the textbook into creative and practical teaching approaches was irrelevant to their learning. Thus, it was more appropriate to develop the triarchic lessons in teaching essay-writing.

Secondly, the analytical approach was adopted when teaching both groups. The reason was to establish a firm foundation for intellectual development in this study. Analytical

thinking is essential in essay-writing. Without adequate training in this type of thinking, it might have been unrealistic for both groups to learn essay-writing. This was particularly so in the students' initial stage of learning essay-writing which seemed underdeveloped, as mentioned.

Given this priority, the amount of time for creative and practical lessons was therefore comparatively limited. In the final, stage three, there were six periods of creative lessons. However, after further analysis, two periods of inner-voice theatre were recategorised from creative intelligence into practical intelligence. Also, the development of lessons for practical intelligence eventually failed at the end of stage two.

With the above considerations, limitations and recategorisation, the organisation of the intervention course follows. Approximately twelve periods of class time was given to teaching analytical reading lessons to both groups. The remaining class time for developing creative and analytical lesson in essay-writing was twenty-five out of thirty-seven (68%) periods in the creative group and twenty-six out of thirty-eight (68%) periods in the analytical group.

In the creative group, four out of thirty-seven periods (11 %) were the creative lessons. Two out of thirty-seven periods (5%) were categorised as practical intelligence but involved creative intelligence. The lessons aiming at practical intelligence were not developed. The remaining nineteen out of the thirty-seven hours (51 %) were analytical lessons. In contrast, four and a half out of the thirty-eight periods (11%) were time for self-study in the analytical group. The remaining twenty-one and a half out of the thirty-eight hours (57%) were the analytical lessons similar to those of the triarchic group (see Table 9).

Table 9: Time allocated to aspects of intervention

Lessons in Academic Learning Activities	Creative Group	Percentage	Analytical Group	Percentage
Analytical reading lessons	12	32%	12	32%
Analytical writing lessons	19	51%	21.5	57%
Creative writing lessons	4	11%	0	0%
Practical (involving creative intelligence)	2	5%	0	0%
Practical (focused)	0	0%	0	0%
Self-study	0	0%	4.5	12%
Total	37	100 %	38	100%

Notes:
1. The unit is a period of fifty minutes in the Taiwanese higher education system.
2. The total of percentage of the intervention for the creative group was 99% and that for the analytical group was 101%, rounded off and presented as 100% in the table.

The above organisation was a consequence of considering the students' needs and the requirement of the university. As a teacher of students and an employee of the university, I was obligated to make the relevant decision with ethical consideration.

(iii) Attempts to extend the intervention

As far as the constraint of curriculum intervention was concerned, I attempted to extend the interventional influence in the overall and differential aspects:

(iii-i) General aspect

The aim of the overall extension was to guide appropriate learning and to endeavour to increase the efficiency of teaching. Thus, the influence of the intervention might possibly have been more demonstrable.

Before the intervention, an introductory lesson was given to both groups to guide them to become mature learners. The students were suggested to have an appropriate attitude and sufficient engagement in learning in this study, regardless of their previous inadequate learning experiences. This lesson included four guidelines:

- Time management;
- The clarification of misconceptions in learning English in Taiwan (e.g. that native speaking English teachers are superior to local, non-native speaking English teachers);
- The purpose of higher education; and

- The value of the teaching approach to intellectual development in this study.

Some of the students repeated the key points of these guidelines in their post-intervention interviews:

> S: …In the university, ... You need to think by yourself… (Post-intervention interview of stage three, Student A, January 6, 2006)

However, it was difficult to estimate whether the above response came from the guideline given in this study or some other source. Furthermore, guiding the students to become mature learners was tremendously difficult. It challenged the long established study habits of coping with tests. This introductory lesson was only to provide the relevant information to a very limited extent.

In terms of my teaching, classroom management was influential on the effect of the intervention, and was included in the general aspect of interventional extension. Strategies of classroom management were adopted in this time-constrained course. Two student-volunteers regularly set up teaching aids before class. I planned and followed the time allocations of the agenda in each lesson. I arrived early, listed the daily agenda on the blackboard and displayed the handouts in each lesson. I required the students to be punctual to class, finish classroom tasks and hand in assignments by the deadlines. I also emphasised to the students that paying attention during lessons would give the best learning result. In general, I avoided any untargeted time in order to maximise the time available for intervention. Some specific strategies of classroom management were constantly adopted in the task of inner-voice theatre (see (i-ii) Inner-voice theatre in 3.3.4.2). My classroom management seemed efficient, since most of the students in both groups demonstrated their appreciation of learning a substantial amount of contents:

> S: …just felt [that I] learnt a lot …, very solid… (Post-intervention interview of stage three, Student B, January 5, 2006)

(iii-ii) Differential aspect

In order to increase the impact of the two differential curricula, the following attempts were made. Each attempt was exercised at some appropriate occasions, rather than in

every lesson. However, the influences from these attempts were difficult to estimate.

Firstly, different assignments for the same lesson were given in order to reinforce the students' learning from different teaching approaches. The creative group was required to accomplish homework of creative writing following on from the reading comprehension of the textbook. There was no such requirement in the analytical group.

Secondly, both groups were given the same requirements for the first two essays. However, the creative group was asked to apply the creative thinking skills (i.e. visual imagination and brainstorming) and learnt to write a creative introduction to the third essay. The analytical group had no such requirement.

3.3.8 Interference

There was curricular interference between the two groups. As a teacher-researcher, I had to facilitate creative thinking of figurative language in the textbook to both groups. The instructional content was only one page in the textbook. The time for this task was only ten minutes. Curricular interference was possibly introduced, but to a very limited extent.

The primary source of interference was from the students' study environment. Some of the students from these two participant groups studied the same major subject or lived in the same dormitory. It would be common for them to talk about their learning experiences and how to pass the intervention course taught by the same teacher. The students were seldom aware of having different teaching approaches in two groups. In stage two, the influence from the task of creative writing was conveyed from the triarchic group to the analytical group:

> …a new group leader [of the analytical group], asked, 'are we going to have a drama performance (i.e. which was taught in the triarchic group)?' (My teacher-researcher diary of stage three, October 24, 2005)

The expectation to experience the same creative tasks was raised. The above request was ignored by me in order to differentiate the curricula between the two groups. However, such interference seemed inevitable. The participants shared part of their

study life within this research context. It was also difficult to estimate the extent of this type of interference or to decrease the possibility of its occurrence. A strategy for resolving this interference to a certain degree is to separate participants into two school contexts. However, this strategy is traded off by the consideration of transferability. Whether the experiences from two school contexts can be transferred to make a meaningful discussion will need to be considered. The balance between solving the problems of interference and transferability should be evaluated in different studies. In this study, separating participant groups into different school contexts was inapplicable because of the difficulty of accessibility (see 3.2.1 Accessibility).

3.4 RESEARCH PROCESSES AND TECHNIQUES

In order to understand the research process and techniques with an appropriate perspective, the nature of the data and the data analysis are discussed.

Teaching based on research evidence has been encouraged to seek gains in school performance (Simons, Kushner, Jones and James, 2003). There were two major types of research-based teaching. At one extreme of this evidence-based teaching compares teachers with doctors (Hargreaves, 1997) and insists that the relevant research be scientific (Mayer, 2001). At this extreme, the focus of research is to produce 'outcome-based education' (Elliott, 1991, p.557). It seems to ignore the pupil's voice (Wood, 2003) and often the teacher's voice. In contrast, another type of evidence-based teaching emphasises meanings ascribed to the actors in the classroom scenario (e.g. teacher and student, Stenhouse, 1979). The focus of this type of study was to demonstrate how to develop the meaningful changes of teaching and learning. The present study pursued this type of evidence-based teaching. In light of the reflections after the second of the three stages of this study, the research perspective was altered from the scientific, outcome-based to the interpretative, experience-based investigation in the final, stage three.

The evidence collected in this study was interpreted from the perspective of teaching practice (Simons et al., 2003). The nature of the data was not a comparative measurement of learning outcomes, but qualitative insights for teaching and learning.

In order to sketch a holistic picture of this study, multiple data sources were used. The

major sources were my teacher-researcher diary, interviewing and the students' written reflections. This study took the interpretative-naturalistic epistemological stance. Within this stance, there were three assumptions in this study. Firstly, the researcher's understanding was value-bound (Lincoln and Guba, 1985). Secondly, the realities were constructed by different data sources (Lincoln and Guba, 1985). Thirdly, the coherence and diversity of the data from different sources was intended to indicate appropriate interpretation within this research context. It is not considered to triangulate the data (Elliott, 1991) in order to examine the realities, which are assumed to be objective.

Action research aims to acquire knowledge by comparing experiences and gaining understanding from changes. As described, the research questions were changed in the final stage because of not being able to develop lessons for practical intelligence. Changes regarding research methods are as follows:

- The approach to investigating the research questions;
- Tests;
- Research paradigms;
- Interview questions; and
- Foci of my teacher-researcher diary.

The relevant findings to make these changes are reported in this chapter. In contrast, the summary responses to the research questions of comparing creative and analytical teaching approaches will be reported in Chapter Four—Findings.

3.4.1 Stage one

There were three stages to this study. Stage one was from September 2004 to January 2005. In this initial stage I was only allowed to teach one class as a new teacher at this university. On the one hand, group comparisons could not be made. On the other hand, it would be sensible to achieve the following two goals in order to prepare for further stages. Firstly, the students' English proficiency in this national university was likely to be higher than that of those I had taught previously in one private university and two colleges. Therefore, I adapted my teaching to this university context at this stage. I also equipped myself to have a better understanding of the students' perspective and their expectation of learning English within this school context. Secondly, my thinking was to

utilise a scientific, quasi-experimental research paradigm in this stage. Within this research paradigm, I attempted to compare the students before and after the intervention course. Furthermore, I sought to develop a new measure of the Triarchic Theory of Intelligence (Sternberg, 1985) based test, although I also undertook interviewing and wrote my teacher-researcher diary.

There were thirty-six students in this class. Before introducing the intervention course, I acquired approval from the chairperson of the department to conduct this study. All of the students were given a subject information sheet in an English-Chinese version. The students' right to withdraw from the research tasks at any time during the research process was explicit in oral communication and the written consent form. Their signatures were obtained on consent forms. All of the students were also required to fill in a sheet of background information to increase my understanding of them. The background information included:

- The students' parents' ages;
- The students' parents' employment;
- Names of the students' primary, junior, and senior high schools;
- Locations of the above schools;
- The students' degrees of interest in English reading;
- Brief reasons for the above interest;
- The students' degrees of interest in English writing; and
- Brief reasons for the above interest.

The above procedures were also executed in stages two and three of this study.

3.4.1.1 *Development of a new test*

All thirty-six of the students undertook this new test. The duration of testing was approximately thirty minutes. There were two pilots to develop the format, content and items for the new measure of the Triarchic Theory of Intelligence (Sternberg, 1985) based test. These two pilots and the analysis of developing this new test are as follows.

(i) The first pilot test

The format of written response rather than multiple-choice was selected in order to extract more content from the students' responses and to avoid the risk of guessing

answers.

Fables were selected as the test content because of the following advantage; they can be analysed, inspire creative writing, and convey practical insights into themes of the story. Thus, all three types of intelligence can be included in one reading passage.

From popular local reading textbooks, I selected two fables. One was the Chinese fable *Spear and Shield*, which was translated into English. The other was *City Mouse and Country Mouse* from western culture. I applied the descriptions of the levels of analytical, creative and practical intelligence in the marking scheme from Sternberg's team (PACE Center, 2009) to write the test items. Three test items for each of the three types of intelligence were produced.

However, many of the students' responses in this new test were blanks. This suggested that including two stories in the test content was too time-consuming for the students to give appropriate responses. Accordingly, I decided to select only one fable to be the test content. With many blanks spread out in the two fables, it was difficult to select one of them as the test content. Thus, I decided to research the literature to identify another appropriate fable to be the test content.

(ii) The second pilot test

The test format was the same as that in the first pilot. Aesop's fables were chosen to be test content for their familiarity among fables from different cultures. Only eight out of approximately one hundred Aesop's fables were consistent between the action and outcome described in the fables (Dorfman and Brewer, 1994). In these eight fables, moral action leads to a positive outcome and immoral action leads to a negative outcome. Out of these eight fables, *The Boy Who Cried Wolf* and *The Tortoise and the Hare* were selected for their popularity among Taiwanese students.

One group of students was first tested on *The Boy Who Cried Wolf* and then on *The Tortoise and the Hare* in their second testing. The students gave many more responses in the story of *The Tortoise and the Hare*. Therefore, it was selected to be the content of the new test.

The possible reason may be that the students felt easier comparing the characters in *The*

Tortoise and the Hare. There are only two characters and they were similarly weighted throughout the context of this story. In contrast, there are three characters— the boy, the wolf and the villagers—in *The Boy Who Cried Wolf*. The character of the wolf was only presented in the last part of the story. The complexity from more than two characters and their presence in different portions of the story could make it difficult for the students to compare.

Next, two test items were removed. These test items were written by following the example from Sternberg's team (PACE Center, 2009). However, I found that they might involve issues of validity in this research context.

The first test item removed was in the creative subset:

Give the best new title for this fable.

Giving a title suggests that there should be only a few words in a response. Such little content caused a problem in comparing the students' responses and marking them at different levels.

The second test item removed was in the practical subset:

Outline the applications of the lesson from the fable.

After reviewing the students' responses, I questioned the validity of this test item. Many of the students seemed to exaggerate in their responses without indicating their real life experience. For instance, one response was: *everybody should make his best effort*. This response could be irrelevant to a student's real life. The students can easily give unreal responses in order to resolve the anxiety of leaving a blank for this test item, which indicates their incompetence in giving responses. Furthermore, it would be difficult for the testers to discover whether these responses were from their genuine competence or head knowledge. The test results in the paper-pencil form are not necessarily indicative of their competence to solve practical problems in daily life, which include action-orientation (see discussion in (iii) Practical intelligence in 2.2; (iii) Recategorisation in 3.3.5.2). Accordingly, this test item was removed from the new test.

(iii) Analysis of the students' responses to the new test

After the above testing, the students were required to give written feedback to describe their feelings about analytical, creative and practical test items. They were also asked to provide explanations for their feedback. Therefore, the appropriateness of this new test was investigated. The duration of this reflective writing was approximately fifteen minutes.

I translated keywords from the students' written responses in Chinese into English. Accordingly, I wrote a six-page summary report of the students' perspectives on this new test. One of the recurrent themes was:

> [This intelligence test] is not appropriate in an English [language] test. (Student written responses of stage one, September, 20, 2004)

This data revealed that the students' expectation of testing in an English course was in the linguistic, rather than intellectual aspect. The title of the Triarchic Theory of Intelligence (Sternberg, 1985) based test may be misleading. The students' language proficiency was actually assessed in this new test. Their reading comprehension was assessed in the analytical items:

(i) To describe the central idea; and
(ii) To compare characters in the fable.

Their creative writing was assessed in creative test items:

(i) To write an additional paragraph to develop unexpected plots; and
(ii) To write a surprising ending to the fable.

Comparatively, it was more difficult to reduce the discrepancy between the linguistic and thinking aspects in assessing practical intelligence. The students were required to express their ideas of solving practical problems in English phrases or sentences. As foreign language learners, this was unlikely to be part of the students' previous experience of learning English. The students may also have struggled with their English proficiency to demonstrate their practical intelligence during testing.

The anxiety about the form of this new test which indicates the intellectual aspect and the worry of insufficient English proficiency in expressing thinking might cause the students' sense of inappropriateness. The sense of inappropriateness may have influenced their negative perspective on the new test and their test performance. Therefore, my attempt to develop a new measure of the Triarchic Theory of Intelligence (Sternberg, 1985) based test ceased.

3.4.1.2 *Semi-structured interview*

As a method, the strength of interviewing is acquiring rich information without imposed assumptions and existing knowledge (Makoae and Jubber, 2008). This strength is particularly demonstrated when interviewees explore their explanations and insights (Reading and Reid, 2007). Therefore, the method of interviewing is valuable in conveying the meanings of the students' learning experience from their perspectives in this study.

There were two concerns about the data from interviewing. The first concern was the inequality of power during the interviewing process (Manias and Street, 2001). The interviewer has more power than the interviewee. The interviewer inevitably initiates the inquiry and continues to take the role of asking questions. The second concern is the effect of social desirability (Crowell, Waters, Treboux, O'Conner, Colon-Downs, Feider, Golby and Posada, 1996). This effect leads interviewees to give responses to meet the society's or the interviewer's expectations, rather than from their genuine perspectives. This effect threatens the validity of the data from interviewing (Coffield and Ridley, 1992). Because of the nature of the interviewing task, these two concerns cannot be totally removed, but efforts to reduce them were made at different stages.

The following section describes different aspects of interview in stage one:

(i) Purpose;
(ii) Practice;
(iii) Interview questions;
(iv) Analysis and findings of pre-intervention interviews and relevant changes; and
(v) Post-intervention questions.

(i) Purpose

There were three purposes to the pre-intervention interview. The first purpose was to facilitate my teaching capacity by understanding the students' former experiences of learning English. The second purpose was to compare the students' experiences prior to and during this intervention. The third purpose was to compare the students' perspectives before and after intervention. I interviewed the students individually before and after the intervention.

(ii) Practices

All of the interview questions were open-ended. I wrote interview questions in English and spoke in Mandarin. All interviews were recorded and burnt onto a digital disk. These procedures were also executed in stages two and three.

I interviewed all thirty-six of the students before intervention. For practical reasons, I randomly selected twenty of these thirty-six students (more than half) to be interviewed individually once again after intervention. Each pre-intervention interview took approximately fifteen minutes and each post-intervention interview took approximately ten minutes. All the interviews were held in a confidential environment; one of the two empty classrooms available according to the interview schedule.

(iii) Pre-intervention interview questions

In order to understand the students' experience of learning English prior to intervention and their perspective on intellectual development, which was highlighted in this study, the following aspects were explored:

- Key incidents in past experiences of learning English;
- Difficulties of learning English reading/writing;
- The instructional style in senior high school;
- The forms of assessment in senior high school; and
- The students' definition of intellectual development.

The first two aspects encouraged the students to reflect upon the meaningful experience and problems in learning English. The third and fourth aspects identified the two major areas of schooling. From the students' descriptions of the above four aspects, the common patterns of the students' secondary English education might be depicted. The

last aspect was asked in order to compare the students' perspective on intellectual development before and after intervention.

(iv) Analysis and findings of the pre-intervention interviews and relevant changes

I repeatedly listened to the audio recordings of the pre-intervention interviews. During the listening process, I took notes on the above five aspects for each audio recording and filed these notes in my computer. According to these notes, I wrote a seventeen-page pre-intervention interview report, including the following three findings:

Firstly, the question of 'what is your definition of intellectual development?' seemed abstract and ambiguous in many of the students' responses. It was time-consuming to extract information from their responses and clarify what they meant. The students gave words or phrases to describe intellectual development, which was mainly analytical and practical thinking. The responses relevant to analytical thinking included:

> IQ, talents, academic performance, fast reactions, a fast learner, a good memory, attentiveness, clear mind, thoughtful, organised, analytical, logical, rational, critical and not jump to conclusion. (Pre-intervention interviews of stage one, 36 students, September, 21-22, 2004)

The responses relevant to practical thinking, included:

> No fear of learning new things, positive attitude, sympathy, persistence, hard working, being fair, reaching goals, communication, having wisdom, flexible thinking, a tendency to grow up, emotional management and leadership. (Pre-intervention interview of stage one, 36 students, September, 21-22, 2004)

There might be a possible danger of losing focus on understanding the students' experience of learning English in the interviews, at the expense of obtaining their responses regarding intellectual development. Therefore, I did not ask about this aspect in the post-interventional interviews. I abandoned my attempt to compare the students' responses in this aspect between the pre-intervention and post-intervention interviews.

Secondly, many of the students reported their negative responses to the major

instructional style—lecturing—in their former English Education. They revealed little experience in other forms of instruction (e.g. interactive style, activity, small group discussion, question and answer). They seldom commented on these forms. Some of their negative words describing the lecture-style instruction follow:

> Boring, no learning, low motivation, superficial, no independent thinking, no creativity and no communication. (Pre-intervention interview of stage one, 36 students, September, 20-21, 2004)

One student illustrated the lack of communication in the lecture style within the classroom as:

> S[17]: …two worlds between the teacher and students. (Pre-intervention interview of stage one, Student A[18], September 20, 2004)

In the area of assessment, the students stated that national testing constrained the school assessment of learning English as:

> S: …lack of validity because of being nervous [during the testing]. (Pre-intervention interview of stage one, Student B, September 21, 2004)

> S: …possible [for the students] to gain good scores without effort [i.e. by guessing answers right]. (Pre-intervention interview of stage one, Student C, September 20, 2004)

> S: …the performance during testing was in my short-term memory…likely to forget [after tests]. (Pre-intervention interview of stage one, Student D, September 21, 2004)

Thirdly, the students revealed little experience of other forms of assessment in their secondary education.

[17] S indicates a student. T indicates me as the teacher-researcher.
[18] The number of students is indicated by letters from A in each discussion.

> S: I never tried this way [i.e. giving presentations] in the past. (Pre-intervention interview of stage one, Student E, September 20, 2004)
>
> S: There are very few types of non-traditional assessment [i.e. non-paper-pencil tests]. (Pre-intervention interview of stage one, Student F, September 20, 2004)
>
> S: I will select traditional testing [rather than portfolio assessment] because I do not know to how to organise files [for this assessment]. (Pre-intervention interview of stage one, Student G, September 20, 2004)

It seemed that the students found it difficult to discuss instructional styles and assessment. Therefore, these two aspects were not explored in the post-intervention interviewing.

In order to ensure the appropriateness of the intervention course in this study, the purpose of the post-intervention interview was changed to discover:

> Whether the intervention had provided appropriate assistance for the students' learning.

The original purposes of comparing the students' learning experiences between their secondary English education and those in this study and investigating their changes during the intervention were not achieved in this stage.

(v) Post-intervention questions

The post-intervention interview questions were changed into two aspects:

- The students' difficulties in learning in this study; and
- Their advice for the next group.

With an attempt to decrease the effect of social desirability, I firstly probed into their difficulty as follows:

> Would you like to talk about your difficulty in learning English reading and writing which was unresolved in this course?

Within this inquiry, the students were formally invited to talk about their difficulties. Their possible reluctance to admit and report their difficulties in front of me as their English teacher might be better managed than if I had made the inquiry in the following forms:

- Do you have or have not any difficulty in learning reading and writing, which were unsolved in this course? Could you explain further?
- Is there or is there not any difficulty in learning reading and writing, which was unsolved in this course? Could you explain further?

These questions seem neutral in form and avoided leading questions because both positive and negative sides of the responses were proposed. However, Chinese students culturally tend to have a greater distance from an authority figure (e.g. teacher). They are also more sensitive to their teacher's reactions. The typical responses to the above two questions could often be that they had no difficulty.

With my second question, I employed the strategy of soliciting advice to resolve the power imbalance (Manias and Street, 2001) to a certain degree:

> What advice would you like to give to the next group to produce more satisfactory learning outcomes?

The students were directed towards speaking to a subsequent peer group, rather than to me as a teacher. They possibly revealed more about their perspectives on this intervention in such an interview context.

Consequently, in the question about difficulty, the students also reported what they had learnt in the intervention. In the task of giving advice to peers, the students revealed two-fold information. On the one hand, they described the strategies for overcoming difficulties when they gave advice, regardless of whether their own difficulties had been solved. On the other hand, these descriptions revealed their perspectives on the

intervention course. For instance, the students gave advice that their peers must be confident in their ability to accomplish this course. What they really meant might be that the intervention was challenging and encouragement was important during the learning process in this course.

3.4.1.3 *My teacher-researcher diary*

One of the most effective methods for professional development in action research is writing a reflective diary (Burgess, 1981; Jasper, 2005). Through the writing process, which is a systematic and self-critical inquiry, the transformation of teacher-researcher perspectives and their teaching performance has been shown (Cochran-Smith and Lytle, 1990).

> The private context of diary writing allows individuals to reflect on their own experiences in a more detached, open and honest manner. ... [and] increases the capacity of individuals to engage in authentic self-disclosure in data gathering situations… (Elliott, 1993, p.183)

The self-reflective inquiry was on-going throughout the research processes of this study in different approaches. My teacher-researcher diary was the most explicit form of the self-reflection.

As described earlier, my approach was a scientific, quasi-experimental research paradigm in this stage. My foci were on comparing the students' responses in interviews and developing a new measure for this comparison. Also, adapting to this new research context consumed my time and energy and I had to learn the following tasks for the first time:

- Teaching in this particular university;
- Playing a dual role of teacher and researcher;
- Developing triarchic and analytical lessons;
- Interviewing university students;
- Developing and undertaking the new type of test; and
- Writing my teacher-researcher diary.

Consequently, I was left with a very limited amount of time and energy and only wrote

six entries in my teacher-researcher diary in English. Nevertheless, I attempted to be emancipated from the prescribed research questions. This is allowed and encouraged particularly in the action research approach (Mellor, 1998). Accordingly, the focus of my teacher-researcher diary included:

- The students' responses to the teaching approach to intellectual development; and
- The other possible significant aspects of teaching and learning in the classroom.

3.4.1.4 *Other source of evidence*

The other source of evidence was only the students' on-line course survey. It was compulsory for the students to give responses in this evaluation authorised by the university. On a 1 – 5 scale survey, the students indicated their responses to the teacher's performance in different aspects (e.g. preparation, instructional goals and contents). They were also given a piece of blank paper, so they could give written feedback if they wanted to. The data from this survey was compared with those in stage two.

3.4.1.5 *Data analysis and findings of stage one*

I repeatedly listened to the audio files of the post-intervention interviews. A recurrent message was a need for time management.

Also, a goal for improving classroom management was explored in my teacher-researcher diary:

> …classroom management will be more efficient next time. (My teacher-researcher diary of stage one, October 16, 2004)

In terms of research, both the students' time management and my classroom management were identified as influential factors in this intervention. However, neither could be naturally integrated into a language intervention course. These two factors were therefore included in the extension of the interventional influences (see (iii-i) General aspect in 3.3.7), rather than in parts of the intervention in stages two and three.

My attempt to detect significant factors other than the teaching approach was achieved to a certain degree. The importance of classroom management was identified. With this finding, curriculum development was directed towards the teaching approach to intellectual development with an awareness of the importance of classroom management.

3.4.2 Stage two

This stage took a semester from February to June 2005. After having received positive student feedback on my teaching in stage one, I was allowed to teach two classes. This extended the study to make group comparisons. There were thirty-three students in the analytical group; and thirty-eight students in the triarchic group. Remaining in the same scientific, quasi-experimental research paradigm as in stage one; I collected data from testing, interviewing, my teacher-researcher diary and other sources.

3.4.2.1 *Pencil-paper testing*

As described (see 3.2.2 Participant groups), in order to investigate whether there was a significant difference between the two participant groups before intervention; the scores of university placement test were obtained before intervention. Two pre-tests were held:

- My version of the language test; and
- *The College Academic Aptitude Battery*.

The duration of the language test was approximately fifty minutes; the duration of the aptitude test was approximately thirty minutes. All thirty-three of the students in the analytical group and all thirty-eight of those in the triarchic group undertook *The College Academic Aptitude Battery*. Thirty-one students from each of two groups undertook my version of the language test. The students who missed the class or were more than ten minutes late did not participate in this test.

In order to observe the possible differences before and after receiving the intervention in the students' learning of English, the following two tests were undertaken after the intervention:

- My version of the final test; and

- The university version of final test.

My version of the final test consisted of the pre-interventional language test but the test items were in a different sequence (replacement version). The students might have recalled the answers from their experience of taking the same test before intervention. The above replacement version would have decreased this probability. Both final tests were in the multiple-choice format and focused on the prescribed instructional contents of the textbook. However, the pool of test items in the university version was made by all of the English teachers. This balanced the possible bias in selecting test contents from the textbook by an individual English teacher. It was inevitable to allow such bias in my version of the final test.

The duration of each of the final tests was approximately fifty minutes. All thirty-three of the students in the analytical group and all thirty-eight of those in the triarchic group undertook these two post- tests.

3.4.2.2 *Semi-structured interview*

This section discusses the following aspects of stage two:

(i) Purpose;
(ii) Practice; and
(iii) Interview questions.

(i) Purpose

In refocusing on the purpose of assisting the students to learn English in this research context in stage one, two aspects were emphasised in the pre-interventional interview of stage two. The first aspect was to investigate the students' genuine needs in learning English. The second aspect was to guide them to set a personal goal in improving their proficiency in English during the intervention. In contrast, the purpose of the post-intervention interview was to investigate the influence on the students' learning English of the intervention, with a focus on personal improvement.

(ii) Practices

In order to survey the possible trends in the above aspects, approximately half the students in each of the two groups were randomly selected. They were individually

interviewed before the intervention. This involved seventeen out of the thirty-eight students in the triarchic group and eighteen out of the thirty-three students in the analytical group. After the intervention, the majority of these students were individually interviewed again. However, one interviewee from each of the analytical and triarchic groups had forgotten the appointment and did not participate in the post-intervention interview. Another interviewee from the triarchic group decided to withdraw from this interview, citing a lack of time. Consequently, there were fifteen interviewees in the triarchic group and seventeen in the analytical group. It seemed that the students had no difficulty exercising their autonomy in withdrawing from the research tasks as written on the consent form.

Each pre-intervention interview took approximately ten minutes. Each post-intervention interview took approximately fifteen minutes. All of the above interviews were undertaken in a confidential environment. It was either my research room or a spare room in the department.

(iii) Interview questions

In the pre-intervention interviews of stage one, the interview questions were more to obtain the descriptions of common practice in the students' secondary English education. In contrast, the interview questions in stage two were more specific and probing into the students' personal experiences of learning English prior to the intervention. The aspects of the pre-interventional interviews are as follows:

- Degree of interest in English reading and writing;
- Description of ability in English reading and writing;
- Key incidents in past experiences of learning English in general;
- Difficulties with English reading and writing;
- The students' expectations of being instructed by the intervention course; and
- The student individual targets to achieve the above expectations.

The question of individual interest was expected to assist the interviewee to reflect on his/her key incidents in learning English. The question of the key incidents and self-evaluation of English proficiency were expected to facilitate the interviewee to respond to his/her difficulty in learning English. The interviewee was also encouraged

to express his/her personal expectations and set a relevant goal for this intervention. The questions of the key incidents, difficulties and expectations were all probing into revealing the students' personal need for learning English. The goal setting was to emphasise personal improvement, rather than just discussing the problems.

The post-intervention interview questions were geared more specifically towards the influences of analytical and triarchic teaching. Furthermore, the students' free responses were encouraged at the beginning and end of the interview to express their voices other than the interview questions.

Asking for free responses might have released the students from the power imbalance (Manias and Street, 2001) to a certain degree. The students were encouraged to generate responses by themselves, rather than passively replying to the interviewer. Also, during the interviewing process, I asked them to feel free to give either positive or negative responses in an attempt to reduce the effect of social desirability (Coffield and Ridley, 1992). In order to probe the students' opinions about the course, they were explicitly told that they should not aim to please me as a teacher by giving positive feedback. The following were the key aspects of the post-intervention interviews:

- Free response about the course;
- Improvements made during the intervention course;
- Difficulties learning this course;
- Key incidents during this course;
- Areas the students wished to improve after the intervention course; and
- Other thoughts.

The interview question about improvement was to facilitate the students' reflections on the positive side of their learning experiences. This interview questions seemed balanced because the students' difficulty during this intervention was also asked about. If they had any negative feedback, it would have been appropriate for them to report it in describing their difficulty. Furthermore, in order to compare the students' responses, the pre-intervention interview questions of key incidents, difficulties in learning and expectations to improve English remained similar in post-intervention interviewing. Answering similar questions twice (i.e. once in each pre-intervention and post-intervention interview) may influence the students' responses. However, it seemed

unavoidable if I wanted to compare their different perspectives before and after the intervention.

3.4.2.3 *My teacher-researcher diary*

The research focus was clarified from the aspects of classroom management in the findings of stage one. Therefore, my writing of the teacher-researcher diary was more focused on the intellectual influences of the analytical and triarchic teaching approaches in stage two. Furthermore, the failure to develop a new test based on the Triarchic Theory of Intelligence (Sternberg, 1985) in stage one led me not to emphasize quantitative data. Regarding the qualitative data, my teacher-researcher diary became significant. It was the only source from the perspective of me as a teacher-researcher, rather than of the students. I wrote my diary entry immediately after each lesson.

My purposes in keeping a teacher-researcher diary included:

- The influence of the triarchic and analytical teaching approaches; and
- The improvement of my teaching.

I had expected the following sequence to occur. When these two teaching approaches had brought meaningful influence during the lessons, I would have observed these influences and written in my teacher-researcher diary. Therefore, my teacher-researcher diary included the in-class observations on interventional influence and the contextual information in the following aspects:

- My self-evaluation of my own teaching performance;
- My experience of solving problems in the classroom; and
- Key incidents during lessons.

The above three aspects were developed in to three series of questions to obtain information within the classroom context. These series of questions were listed on the top of the first page on each of my teacher-researcher diary entries:

- How do I feel about this lesson? Why do I feel this way? What did I learn in this lesson? What task has been well organised and what task has not? What might be the possible reasons for this? What would I change if I could redo

it? What will I do to improve teaching next time?

- Were there any problems during or out of the class? What were they? Describe the scenarios. How did I solve it? Did the solution work? Why or why not? What would I do, if I could resolve the problem? What will I do when I meet the key person involved in the problem next time?
- What were the significant events? Were they initiated from a teacher or a student? What are the meanings behind these events? What are the values conveyed in these meanings? Do these values consistently emerge? What are the influences of these values?

In total, I wrote fifty entries in the teacher-researcher diary in English using word processing. The average word count in each entry was 734 words.

3.4.2.4 *Other sources of evidence*

There were three other sources of evidence:

(i) On-line course survey;
(ii) The student reflection papers; and
(iii) Audio course recording.

(i) On-line course survey

This is the same compulsory university on-line survey, on a 1 – 5 scale, as in stage one.

(ii) The student reflection papers

Each student in both groups was required to write a semester reflection on the intervention course. During class time, the students wrote down their reflections. They were encouraged to give both positive and negative feedback. I also gave an oral guarantee of confidentiality. The student reflection papers would be read only after their final marks were submitted to the university. All thirty-three of the students in the analytical group and all thirty-eight of the students in the triarchic group wrote their reflection papers. All of these students selected English to write their reflections. The average word count of these reflections was approximately 350.

(iii) Audio course recording

Every lesson was audio-recorded in order to identify the relevant information with other

data sources. There were fifty-three course recordings in the triarchic group and fifty-five course recordings in the analytical group.

3.4.2.5 *Data analysis and synthesis*

This section discusses the following aspects of data analysis and synthesis:

(i) Confidentiality;
(ii) The principles of prioritising data; and
(iii) Techniques of analysis in data analysis and synthesis.

(i) Confidentiality

Student confidentiality was protected by not retaining any research details that would allow any individual student, any group, or the school, to be identified. In this study, this confidentiality was also exercised in restricting my own accessibility to information. I analysed the data from interviews and read the student reflection papers only after their final marks were sent to the university. This delay strategy prevented me from knowing and therefore being influenced by the students' feedback when I marked their academic performance.

(ii) Principles

There were two principles to analysing data from different sources.

The first principle was that I prioritised and analysed the qualitative data before the quantitative data. The qualitative data conveyed more meaningful information to facilitate a better quality of teaching and research in the next stage. In contrast, the quantitative information about the students' performance in the two final tests revealed the degree of achievement. The test results could not explore how to improve my teaching or the students' learning. The quantitative data were only used if they could add to the knowledge of the above improvement. In stage two, the data from the final language tests were ignored because the focus on comparing the two groups was in the final and third stage of this study.

The second principle was that the qualitative data concerning the students' perspective was prioritised and analysed before the other qualitative data involving my perspective as a teacher-researcher. Thus, the emic (i.e. insider) perspective (Headland, Pike and

Harris, 1990) might be further established. Both I and the students were insiders in this study. However, I had comparatively greater power in the interactions with the students and in bringing influence upon their learning. Thus, I was more likely to be biased by my own teacher-researcher perspective. Nevertheless, the original intention of this study was to benefit the students in receiving the teaching approach to intellectual development. This intention was unlikely to be realised without the voices of the students. Regarding how significant the students' voices were, I proposed to identify the students as '**targeted insiders**' in this study. The students played a more essential role in revealing the raw data to investigate the research questions and to achieve the above goals than me as a teacher-researcher. The raw data from the students' perspectives was prioritised to balance my possible bias. In contrast, I as a teacher-researcher played a significant role in reflecting on my teaching and the students' learning experiences at the level of interpretation. Based on the above priority, I analysed the data from three sources involving different degrees of the students' perspectives:

- The student reflection papers (the students' perspectives originated by themselves);
- Interviews (the students' perspectives facilitated by my interview questions); and
- My teacher-researcher diary (teacher-researcher's perspective, including interaction with the students during the intervention).

(iii) Data analysis and synthesis

The data analysis was not only in the above sequence of prioritising the three data sources, but also spiral. The findings of the analysis of the student reflection papers were a thinking framework to search for coherent or different but meaningful messages in the data from the interviews. After this search, the findings from these two data sources became a thinking framework to search for coherent or different but meaningful messages in the data from my teacher-researcher diary. Lastly, the final data synthesis was undertaken. The details of these four processes are discussed:

(iii-i) The student reflection papers;
(iii-ii) Interview;
(iii-iii) My teacher-researcher diary; and
(iii-iv) Final data synthesis.

(iii-i) The student reflection papers

A coding system was developed to identify the meaningful messages. 'Open coding' which 'resists the temptation to rely on prior concepts to understand data' (Padgett, 1998, p.76) was applied. The technique of 'constant comparative analysis' (Padgett, 1998, p.77) was adopted.

In the first open coding, I marked the strengths and weaknesses of this intervention in each student reflection paper in order to comprehend their overall perspective on this intervention.

In the second open coding, the following categories were identified:

- Perspective on the intervention course;
- Perspective on English learning;
- Perspective on one's English proficiency;
- Perspective on the English teacher;
- Perspective on future learning in English;
- Experiences of change; and
- Perspective on other things.

Beginning with the above inductive analysis, I went back over each student reflection paper to ensure that the above categories were coded in accordance with the data. This was a deductive process of analysis (Padgett, 1998). After this process, the 'Perspective on one's English proficiency' and 'Perspective on future learning' were replaced by 'Perspective on one's learning English' in order to integrate relevant information. Lastly, I re-read each student reflection paper, with the aim of identifying any data that did not fit into the above categorisation. A new category of 'Pressure' emerged and replaced 'Perspective on other things'. Thus, the categories of open coding were finalised:

- Perspective on the intervention course;
- Perspective on English learning;
- Perspective on one's learning English;
- Perspective on the English teacher;
- Experiences of change; and

- Pressure.

Based on the data in these categories from post-intervention interviews, the sub-categories were deductively developed into a thematic matrix.

(iii-ii) Interviews

From the pre-intervention interview data, I attempted to identify the recurring messages across stage one and two. I repeatedly listened to each of the audio recordings of stage two. During the listening process, I took notes with the aim of searching for the similar or different but meaningful messages from the note files of stage one.

In contrast, from the post-intervention interview data, I attempted to identify similar messages between different sources. I repeatedly listened to each of the audio recordings of the post-intervention interviews. During the listening process, I took notes with the aim of searching for similar or different but meaningful messages within the categorised data from the student reflection papers mentioned. The above mentioned thematic matrix was modified in this process.

Also, during the above process of note-taking, I applied the technique of counter case analysis. I considered the nature of data and made a subsequent decision as to which data should be included in further analysis. There are two types of counter cases which were atypical from most data. One type of these atypical data was disconfirmatory evidence (Goetz and LeCompte, 1984). These data are inappropriate to be included into analysis because it is problematic in interpretation. In contrast, the other type is discrepant evidence (Goetz and LeCompte, 1984). This is valuable in analysis because it provides meaningful information as an atypical case. Both types of counter cases were found in this study.

One student was born in Taiwan and received primary and secondary education firstly in Taiwan and then in South Africa prior to the intervention. During the interviewing process, this student selected Mandarin as the means of communication but still found it difficult to express his ideas. His reluctance to speak in English and his difficulty in speaking Mandarin seemed to reveal the unusual language development. His learning experience was mixed between a foreign language environment in Taiwan and a second language environment in South Africa. Without the similar quality of language

competence and shared learning experience in the schooling contexts with all the other students, the data from this the student were removed as disconfirmatory evidence (Goetz and LeCompte, 1984).

In contrast, there were two students who opposed me during the intervention. The data from interviewing each of these two students and from their student reflection papers were scrutinised in analysis. These data had a value as discrepant evidence (Goetz and LeCompte, 1984) in exploring different perspectives from most of the other students and from me as a teacher-researcher.

(iii-iii) My teacher-researcher diary

The technique of a 'long soak' (Smith, Immirzi and Blackwell, 1975) was adopted to synthesise the recurrent messages in each diary entry. This process was an inductive analysis (Padgett, 1998) of repeatedly 're-reading the text with the aim of establishing themes and patterns' (Elliott, 1993, p.246).

Afterwards, the findings of the above student reflection papers and interviews provided a framework for identifying similar messages from different data sources. Thematic matrix was modified again in this process. This modified thematic matrix was developed into the content table of the synthesis report of stage two.

(iii-iv) Final data synthesis

The data synthesis evolved from the above analysis of:

- A single data source in stage two (i.e. the student reflection paper);
- A single data source across stage one and stage two (i.e. pre-intervention interview, teacher-researcher diary); and
- The different data sources in stage two (i.e. the student reflection papers, the post-intervention interview and my teacher-researcher diary).

Based on the above process and the exclusion of disconfirming evidence, I repeatedly revisited the relevant student reflection papers, my teacher-researcher diary and notes from interviewing data. I selected some raw data from interviewing and from the recording file. I then made transcripts of these raw data to support some key information from the above review. The focus on this data revisiting was to reflect on a more holistic

picture, rather than to confirm the findings of the previous process of analysis. Thus, I wrote the synthesis report of stage two in thirty pages. In writing this report, I did not attempt to search the prescribed perspective on comparing the group differences. I took the stance that the two groups might have different stories. I depicted themes emerging from each of the triarchic and analytical groups and then compared these themes. I did not search for a particular theme from one group in the other group.

3.4.2.6 *Findings of stage two and further data collection and analysis*

In the next sections I reported the findings relevant to the following three aspects:

(i) Teaching;
(ii) Research paradigm; and
(iii) Interviewing.

(i) Teaching

One key finding from the synthesis report of stage two was that my teaching was affected by the scientific, quasi-experimental research paradigm. For instance, I utilised my teacher authority in order to equalise the instructional time between two groups. The triarchic group was required to have an additional class time to compensate for the time lost for national holidays. A conflict between me and the students thus arose. The students opposed this idea by disagreeing with my several options of days to have the lesson:

> T: ..I have to make up for the spring break…
> …
> Student A: Just let it be. [i.e. No need for making up]
> (Some of the students nodded]
> …
> T: Tuesday night?
> …
> T: So how about Thursday night?
> Some of the students: No! No!
> …
> Student B [who had an influence among his peers]: Absolutely not, we are very firm. (Transcript of course recording of stage two, March 23,

2005)

Also, in order to standardise and achieve the prescribed amount of time for each task in every lesson between the two groups, I endeavoured to control the class time. My intention of controlling was observed by the students:

> …she [i. e. me, the teacher] even calculated every minute into her death-like stopwatch, as if someone prepared to steal her time away all the time. (Student reflection paper of stage two, Student A, June 8, 2005)

This intention also caused my nervousness about teaching to a certain degree:

> I was…nervous for anything unexpected [to jeopardise my research]… (My teacher-researcher diary of stage two, March 3, 2005)

This key finding was coherent to my further reflection. In my teacher-researcher diary of stage three, I described that my teaching in stage two became artificial due to the influence of the scientific, quasi-experimental research paradigm. In order to detach my own characteristics in teaching, I kept the role of a scientist in my mind and perceived the classroom as a laboratory to collect data:

> My mind was fixed on data collection…anything [e.g. not handing in homework, having different amounts of intervention between two groups] with a possibility of jeopardising this [i.e. data collection] would have been avoided in advance. (My teacher-researcher diary of stage three, December 29, 2005)

According to these data, my manipulation caused the students' dissatisfaction. Their mistrust towards my decision-making during the intervention (e.g. an additional class, measuring time used in tasks) was also revealed. An extreme case explored this mistrust. One student requested me to cancel one of two of the final tests in front of the entire class. Some of the students seemed to agree with him by nodding their heads. After I explained that both final tests were required by the university, this student demonstrated his mistrust of my explanation by double checking it:

> …he [the above student] went to the [administration] office to inquire about … having two final tests and got the response 'it was necessary to have two finals'. (My teacher-researcher diary of stage two, June 8, 2005)

The above information led me to a deeper understanding of my own teaching, which was a lack of trust from the students and was distorted by my dual role of teacher-researcher. It was certain that the quality of my teaching needed to be improved. On the 1 – 5 scale of the on-line course survey from the university, the average score of the students' evaluation of the intervention dropped from stage one to two (see Table 10).

Table 10: One-line course survey (stage one to two)

Average	Analytical Group	Participation	Triarchic Group	Participation
Stage I	--	--	4.08	97% (compulsory)
Stage II	2.68	91% (compulsory)	3.25	92% (compulsory)

However, the students' perspectives in this stage might involve their learning experiences with their former English teacher in the previous semester of the yearly course of *Freshmen English*. The students were likely to register this teacher as a teaching authority. I might have been less favoured by teaching them at a later stage. They also tended to compare their learning experiences with this teacher and with myself. The students may experience more pressure from my course, which was potentially more intensive than the course in the previous semester. The survey was undertaken immediately after the competition of my course. It was likely for the students to have a clearer awareness of the pressure than of the positive influence of this intensive course upon their learning of English. The next stage was conducted in the first semester of the next year. I would be the teacher with whom the students interact first. This possible tension would be resolved.

Also, the students' negativity might have been caused by my research relevant behaviour:

> …she brings a tape recorder in every lesson. I really feel very uneasy to

> have my voice recorded… (Student reflection paper of stage two, Student B, June 8, 2005)
>
> …timer that would cause a pressure on the students…I suggest control the time by clock or watch and do not be so conspicuous. (Student reflection paper of stage two, Student C, June 10, 2005)

In the light of the above negativities and mistrust, I decided to develop strategies to establish a trust relationship with the students in stage three. I also decided to reduce the instructional content in order to ease the pressure from the intensive intervention in stage three. This pressure might have affected the teacher-student relationship and the students' perspective on learning in this intervention. Another purpose of this reduction was to refine my teaching.

(ii) Research paradigms (new raw data)

The above data synthesis process revealed that some of the students had a negative perspective on involving research in teaching. This encouraged me to reflect on my scientific, quasi-experimental research design in stage one and two. I was involved and needed to understand how the research paradigm in this design operated unconsciously throughout my teaching. Therefore, I revisited the following sources:

- The student reflection papers;
- Notes of post-intervention interviews;
- Relevant raw data of post-intervention interviews.

Furthermore, I started a process of collecting new raw data and wrote other fifteen entries in my teacher-researcher diary.

Looking at these diary entries, I discovered the inappropriateness of combining two research approaches with opposite research paradigms. The scientific, quasi-experimental approach holds that the truth is objective and non-negotiable. In contrast, the interpretative-naturalistic approach contends that the truth is subjective to the interpreters. My understanding of the above difference was demonstrated:

> A quantitative research [in the scientific, quasi-experimental paradigm]

> is … presenting a world from one window, which constitutes by control and independent variables. The world … from this window is … the dependent variable and its relevant discussions. On the contrary, a qualitative research [in an interpretative-naturalistic paradigm] is opening many windows towards a world. It explores…the world ... provides multiple meaningful perspectives [from these windows] to let people understand the world. (My teacher-researcher diary after stage two, August 2, 2005)

My struggle between these two research paradigms was illustrated:

> By adopting both qualitative [i.e. interpretative-naturalistic research paradigm] and quantitative [i.e. scientific, quasi-experimental research paradigm] approaches…I feel I am like a research dinosaur wondering in a city, named academic community. With a heart for seeking truth, I am so uncivilised and flamed by the quest of…so-called research methods… (My teacher-researcher diary after stage two, October 11, 2005)

In order to prevent similar tensions recurring in the next and also final stage of this study, it was necessary for me to redefine the nature of this study within an action research format. This study therefore was rooted in the interpretative-naturalistic research approach. This decision-making was revealed in my new teacher-researcher diary:

> A giant [i.e. a symbol of scientific, quasi-experimental approach] … looking down the fascinating miniature world in front, with his telescope, microscope and magnifying glass, turns [i.e. change into] a child-fairy [i.e. a symbol of interpretative-naturalistic approach] bared handed, footed jumping and flipping over the windows to the world behind, beneath and beyond, with the feelings of a heart and the reflection from the soul. (My teacher-researcher diary after stage two, August 6, 2005)

Nevertheless, the above decision was ethical in terms of maintaining the students' adequate learning. The artificiality of my teaching in stage two might have introduced this inadequacy.

Ethical issues were increased as the teacher's action research progressed (Hammack, 1997). The ethical concerns were necessary for my teacher-researcher role and played a significant role in making the relevant decisions in this study. Different significant decisions which shaped this study were made in order not to endanger the students' learning. These decisions were the selection of the type of participation (see 3.1.3 Type of participation), the priority of analytical teaching (see (ii) Constraints in 3.3.7) and the change of research paradigm in the above (see Table 11):

Table 11: Ethical decisions

Stage	Ethical Decisions
I	Expert participation
II	Prioritising analytical teaching
III	Changing research paradigm

(iii) Interviewing (reanalysis from the acquired data)

Rather than producing the new data in my teacher-researcher diary mentioned, I re-analysed the data in stage one and two with a new aim. I again listened to each of the pre-intervention and post-intervention interview audio recordings from stages one and two. The new aim was to improve the quality of my interviewing. After this process, I realised two facts:

- My interviewing needed to develop in depth in order to provide more contextual information; and
- My interview ability needed to improve.

Therefore, I again re-listened to each of the pre-intervention and post-intervention interview audio files in stage two instead of those in stage one. The interview questions in stage two were more likely to be adopted in stage three. During the listening process, I re-asked the same interview questions several times, as if I was facing an invisible interviewee in stage three. In this self-practice process, I rewrote the interview questions and wrote the relevant reflections. As a result, I wrote a forty-two page reflective report on interviewing, which included 296 ideas to modify my interviewing. This report consisted of the following aspects:

(iii-i) The contextualisation approach;

(iii-ii) Principle of interviewing;

(iii-iii) Principle of listening to recordings;

(iii-iv) A tacit approach; and

(iii-v) Interview skills.

The following discussion demonstrates the changes in the interviewing process from stage two to stage three. The relevant transcription of interviews in stage three are included in this discussion.

(iii-i) The contextualisation approach;

The contextualisation approach was applied when asking the interview questions. With the written interview questions, I wrote each question in a script. The purpose was to increase my readiness to ask appropriate questions correspondent to the interaction with the interviewee during the interview process For instance, an interview question was:

> In your previous experiences of learning English, what are the major and meaningful changes? What are the key incidents?

I wrote the following script:

> Tell me about something about learning English since you started to learn it. What are the most interesting things in your experiences? Are these experiences the same or changes? What are the most meaningful things, do you think? Do you like these changes? (Interview reflection report of stage two, August, 2005)

I also repeated the scripts several times to equip myself for the above readiness in stage three. The differences between stages two and three are as follows.

In stage two, the above question was asked as follows:

> T: Could you briefly describe the important experiences in your learning English reading and writing in the past? The comparatively more meaningful experiences?
>
> S: Hum…Can you give me an example? (Pre-intervention interview of

stage two, Student A, March 2, 2005)

This student asked me to clarify 'the meaningful learning experiences' in the interview question.

In stage three, the same question was asked within a personal learning context. There are two examples:

> T: Since you started to learn English in your childhood to now, has anything interesting occurred?
> S: Interesting? Actually, (a pause) the matter of learning English, [I] felt that there would not be anything interesting, perhaps!...
> T: …Then, do you have experiences, which are deep in your impressions?
> …
> S: Just when [I] started to go to senior high school,… (Pre-intervention interview of stage three, Student B, September, 26, 2005)

> T: Since you started to learn English in your childhood to now, has anything interesting occurred?
> S: Learning English, interesting? Actually, I was not interested…later on, I became more interested.
> T: How did this happen? Anything happened? Any changes? (Pre-intervention interview of stage three, Student C, September 22, 2005)

The above two examples demonstrated that when the students were reminded by the timeline from their childhood, they were more able to give responses from their personal learning experiences. Following this context, the first student was assisted to continue talking by only replacing the keyword 'interesting' with 'something deep in you impression'. These two expressions were not the same but both could indicate key incidents in the students' learning journey. The second student was facilitated to talk about the changes after reflecting on his learning experiences using the timeline.

Another interview question was:

> In this semester, what are the major and meaningful changes? What are the key incidents?

I wrote the following script for asking this question:

> Do you study English in a similar or different way since taking this course? Tell me about it. (Interview reflection report of stage two, August, 2005)

In stage two, the typical example of asking this question was:

> T: Are there any experiences for you to make a change during this semester? For you, it is quite meaningful.
> S: During this semester?
> T: Positive or negative is fine. Just pick a significant influence upon you [i.e. your learning].
> S: Significant experience. I felt it was mainly in…(Post-intervention interview of stage two, Student D, June 9, 2005)

In stage three, the same question was asked in a more personal way. The focus of the question was towards the student himself/herself as a person. He/she seemed to give responses readily in the following examples:

> T: Are you the same or changed during this course of *Freshmen English*?
> S: In learning English?
> T: Anything. Study habit, life-style, learning English, anything will be fine.
> S: Just…(a pause), I tend to plan [in advance]… (Post-intervention interview of stage three, Student E, January 6, 2006).

> T: Are you the same or changed during this course of *Freshmen English*?
> S: I felt, I changed [my] learning attitude… (Post-intervention

interview of stage three, Student F, January 5, 2006)

The approach of contextualisation seemed helpful in extracting the students' thinking during the interview.

(iii-ii) Principle of interviewing

A misleading interview principle was discovered. I had been overly conscious about asking leading questions, which might result in the greater influence of social desirability (Coffield and Ridley, 1992). Being affected by this, I sometimes lost focus while interviewing in stage two. In the pre-intervention interviews, I sometimes allowed the students to speak freely on their English learning experiences without further inquiring into the relevant details or meanings. In the post-intervention interviews, I had hesitated to focus in on the influence of the analytical and triarchic teaching. This resulted in too wide a range of information from which to draw a conclusion. This fundamental understanding of the nature of interviewing made me realise the following reality:

> In order to obtain useful information, it was justifiable to focus on the research questions, although avoiding leading questions was also crucial.

Without this stance of interviewing, I would not acquire the knowledge needed in responses to the research questions. The interviews would not be a valuable data source. My researcher role in the interviewing would be compromised.

A few other thoughts on interview principles are as follows:

- Interviewing is a process of communication, rather than solely seeking answers to specific questions. (Interview reflection report of stage two, August, 2005)
- It is necessary to recognise that interviewees' language may not be academic or even clear. It is frequently necessary to clarify the meanings of their responses to the interview questions. (Interview reflection report of stage two, August, 2005)
- Interviewing is like digging a mine. You find more in the mine by asking questions, particularly by the type of question, 'why?'. (Interview reflection

report of stage two, August, 2005)

- I used oral Mandarin translations from the original interview questions written in English during interviews. As an interviewer, I needed to be aware of the ambiguity caused by two languages. For example, an interview question would be 'the most useful thing you learnt in this course'. The translation of this English question could mean two things in Chinese. One is 'the most useful way to learn English'; the other is 'the most useful knowledge from learning English'. Thus, it was necessary to clarify the interviewees' understanding of the interview questions from the perspective of the language used during the interview (Interview reflection report of stage two, August, 2005).

(iii-iii) Principle of listening to recordings

I concluded that the purpose of listening to the recordings of interviews was to comprehend the meaning from the student perspectives in a big picture. The purpose was not to search for specific data for prescribed perspectives (e.g. whether the students like this intervention course).

(iii-iv) A tacit approach

In order to facilitate the students' talk during the interviewing process, a tacit approach would be applied in the improvement of the equipment, facilities and the oral greeting. The following changes in the interview setting were expected to create a comfortable environment for talking.

I would entertain the interviewees with drinks and chocolates; add cushions to the sofa and attach an '*Interview in Process*' notice on the door. Also, I would make the textbook available in case the interviewee felt it would be helpful in recalling their learning experience. In order to have a better quality of recording, I would adjust the angle of the microphone more towards the interviewee. I would also place a cloth underneath the microphone to reduce the possible noise interference from unintentionally moving the microphone or the table underneath.

The tacit approach would also change the way of greeting the interviewee, which initiates the dialogues in the interviewing process.

In stage two, the following list of questions was used to reiterate the interview conditions and greet the interviewee:

> How are you today? What's your name? Are you all right for talking now? Are you all right with the recording? It will be confidential.
> Do you have any other things to do immediately after the interview? When is the time you must leave? Could you speak louder? Shall we start now? (Interview reflection report of stage two, August, 2005)

After obtaining the interviewee's permission to make the recording, the typical beginning of the interview follows:

> T: XX [i.e. the student's first name], I am going to record. Could you please speak loudly?
> S: All right.
> T: The recording file will be confidential. Therefore, you may say what you want to say.
> S: O.K. (Pre-intervention interview of stage two, Student A, February 25, 2005)

In stage three, I wrote down the following script to establish the relationship with the interviewee and facilitate his/her initial talk:

> T: Hello. Come on in. Have a seat. Would you like a cup of coffee and a piece of chocolate from England? This interview will take about 45 minutes as mentioned in the sign-up sheet. Is it all right?
> Now shall we start?
> (Interview reflection report of stage two, August, 2005)

Also, after obtaining the student's permission for recording, the introduction became the task to initiate the student's talk:

> T: XX [i.e. the student's first name], would you firstly self-introduce yourself briefly?
> S: What should I say?

T: Anything is fine.

S: Hay (laugh). I do not know what to say.

T: Where do you live? What family members do you have?

S: My family…

T: What do you do in your free time?

S: I will, I will do something with the computer. I like to play on the computer. (Pre-intervention interview of stage three, Student B, September 21, 2005)

(iii-v) Interview skills

After obtaining knowledge of interviewing principles as described earlier, I was stimulated by many ideas for improving my interview skills. In particular, refining my language in the interviewing process would be helpful in improving interviewing skills. This language refining was enhanced in the self-practice process mentioned. Here are three random examples:

- As an interviewer, I should not hurry through the entire list of interview questions. On the contrary, I should keep the interview at an easy pace in order to maintain a relaxed atmosphere during the process. (Interview reflection report of stage two, August, 2005)
- When an interviewee could not talk about a particular question, I could use an appropriate synonym or another way to ask the same question. For example, for the question, 'What are your most interesting experiences of learning English in the past?' I could replace 'interesting' with 'exciting'. I could also ask 'What experience of learning English would you like to experience again?' instead. (Interview reflection report of stage two, August, 2005)
- I should not be distracted by an interviewee's response which I thought might not be true. For example, an interviewee claimed that his sleeping in class would not affect his learning result! I did not make any judgment on his behaviour. Neither did I show my disbelief through my facial expression. On the contrary, I asked exploratory questions, such as the reason for his sleeping in the class. (Interview reflection report of stage two, August 2005)

3.4.3 Stage three

This stage was the final investigation of this study. Prior to this stage:

- The curricular development was finalised;
- The research paradigm was changed;
- The interview skills were polished; and
- The key area of improving the quality of my teaching was identified.

I was also more familiar within this research context with two semesters of teaching and research experience behind me. With the above capacities, I was more ready to explore the responses to the research questions. As the research questions were changed into comparing the influence between the creative and analytical teaching approaches, the two participant groups were the creative and analytical groups.

This stage took another semester, from September 2005 to January 2006. There were thirty-five students in the creative group and forty-two students in the analytical group (see details in 3.2.2 Participant groups).

3.4.3.1 *Pencil-paper testing*

In the same way as for stage two, I obtained the scores of the university placement test before the intervention and the following two pre-tests were undertaken:

- My version of the language test; and
- *The College Academic Aptitude Battery.*

My version and the university version of the final tests were held after the intervention course (see details in 3.4.2.1 Pencil-paper testing). The duration of the language tests was approximately fifty minutes. The duration of the aptitude test was approximately thirty minutes.

The missing data from these tests follows. Three students in the analytical groups did not join the university language placement test. They failed this compulsory course of *Freshmen English* in their first year and reregistered for it in this study. One student in the analytical group did not take *The College Academic Aptitude Battery* as he did not

attend the class. All thirty-five students in the creative group and forty-two of the students in the analytical group undertook both post-intervention tests. In order to investigate the nature of the analytical and creative groups before the intervention, SPSS (Statistics Package of Social Science) was utilised. In the analysis of the T-test, there was significant group difference in the university language placement test (t (67) =-3.52, p<.001). However, no significant group difference was found in my version of the language test and the aptitude test (see details of group differences and similarities in 3.2.2 Participant groups).

3.4.3.2 *Semi-structured interview*

This section describes the following aspects in stage three:

(i) Purpose;
(ii) Practice; and
(iii) Interview questions.

(i) Purpose

The purpose of the pre-interventional interview in this stage was not only to obtain personal experiences as it was in stage two, but also to obtain information involving more contextual information (see (iii-i) The contextualisation approach in 3.4.2.5). My attempt in stage two to guide the students to perceive or set their personal goal for studying English during the intervention was stopped. Some of the goals set by the students showed a lack of practicability. Also, I was unlikely to follow up the goal for each of the students (see the (iii-i) Pre-intervention interview questions in the following).

The purpose of the post-intervention interview focused on the influences upon the students' learning between creative and analytical teaching approaches. Furthermore, the more specific areas (e.g. favourite task, most useful content) than those in stage two were addressed. Also, this interview required the students to reflect on their learning experience. The students thus addressed their perspectives within a wide context—learning English in Taiwan as a foreign language environment.

(ii) Practices

Similar to stage two, in order to survey the possible trends of the students' perspectives,

approximately half the students in each of the two groups were randomly selected to be interviewed. This involved sixteen of the thirty-five students in the creative group and twenty-one of the forty-two students in the analytical group. These students were individually interviewed before and after the intervention. No participants withdrew from the interviews or forgot the time of their appointment as had been the case in stage two. This might indicate a stronger willingness of the students to participate in interviews in this stage than that in stage two.

In order to reduce the students' and my own pressure because of the packed timetables, I scheduled the interviews on a weekend from Friday night to Sunday, rather than during weekdays as in stage two. I stayed in a guest room on campus over the interview weekend to prevent fatigue from commuting as I had experienced in stage two.

The length of each pre-intervention interview was approximately forty-five minutes; that of post-intervention interview was approximately forty minutes. The above lengths indicated the interviewing had developed in depth. All of the pre-intervention and post-intervention interviews were undertaken in the confidential environment of my research room.

(iii) Interview questions

Both the pre-intervention and post-intervention interview questions were substantially modified.

(iii-i) Pre-intervention interview questions

The only question that remained the same from stage two was the key incidents in learning English. The following changes were made.

Firstly, the original task of asking the students to assess their English proficiency was planned to facilitate the students to set their own personal goal of making progress, rather than as an accurate assessment. However, it was difficult to understand the big picture of the students' English proficiency by their self-reporting. The students adopted different approaches to perceive their proficiency in English. Their self-assessments included test scores, ability to read genuine English materials, and writing performance evaluated by a commercial educational organisation.

Also, their setting a goal or plan for studying English was impractical. In the beginning of this course, the students were informed of the different areas of *Freshmen English* studied over two semesters. The areas of instruction for this semester were reading and writing. Those for the next semester were listening and speaking. In the English reading and writing class, some of the students expected to improve their oral ability:

> S: …increase my ability to express orally. (Pre-interventional interview of stage two, Student A, March 2, 2005)

Regarding the area of reading and writing, some expectations from the students were rather irrelevant to cultivating the competence of reading and writing in English:

> S: Actually, I now fix my goal in General English Proficiency Test.[19] I expected [myself] to achieve the upper-median level. (Pre-interventional interview of stage two, Student B, March 2, 2005).

> S: I rather like to have greater freedom [in English writing].
> …
> S: Yes, I felt this way may be more useful in the future. If there was a [writing] structure given, …required you to start to write [with this structure]. [You] must feel you don't know what to do in the beginning…a structure would be rather heavy…
> T: What do you expect then?
> S: Just not to give any structure. [Let me] write in my own way. (Pre-interventional interview of stage two, Student C, February 25, 2005)

From my viewpoint as a teacher, improving reading for a test and enjoying free writing would not help the students to increase their competence in English reading and essay-writing. The above goal set by the students seemed inappropriate for an English course in higher education.

Some of them had difficulty with setting a personal goal:

[19] General English Proficiency Test (GEPT) id developed and administrated by the Language Training and Test Centre (http://www.gept.org.tw). This centre is also the only authorised organisation to execute the Test of Teaching English as a Foreign Language (TOFEL) in Taiwan.

S: [I] hope to improve [my] writing.

….

T: Is there any specific area [of writing], you want to improve?

S: I do not know. (Pre-interventional interview of stage two, Student D, March 3, 2005)

Accordingly, the above aspects of assessing proficiency in English and goal setting at stage two were not asked of the students at stage three.

Secondly, the interview question concerning the students' difficulties in learning English was substituted with another approach. The word 'difficulty' might still have caused the students' self-consciousness to a certain degree and thus constrained their responses. The same information could be obtained by seeking their opinions of the significant factors of learning English in Taiwan. Another advantage of this approach was to provide a context in which the students could give their perspectives more substantially. The students' difficulties would have been more appropriately investigated by having them explain the perspective mentioned.

Thirdly, these interview questions about the students' motivation were added:

- The students' personal interesting experiences in learning English in Taiwan;
- The students' perspective on using English as a language in Taiwan; and
- The students' favoured instructional tasks.

The estimation of personal degree of interest in learning English in stage two was not asked in stage three. The nature of self-assessment in this task seemed to have directed the students' thinking into an embedded quantitative perspective on the degree of interest, rather than giving responses freely. The above interview question of personal interesting experience was more appropriate to facilitate the students' talk and thus providing qualitative data.

The key aspects of the pre-interventional interview questions are as follows:

- Interesting experiences in learning English;
- Key incidents in learning English;
- Types of general instructional tasks;
- The students' favourite instructional task, its advantages and disadvantages;
- How to learn the four common language skills of English;
- The key to learning the above skills;
- Significant factors in learning English in Taiwan; and
- Whether the four language skills of English were useful in Taiwan.

The interview question regarding interesting experiences of learning English was potentially effective in initiating a dialogue in the interview. It required the students to recall their positive experiences of learning English. The aspect of key incidents was appropriate to follow the aspect of interesting experiences because these two may overlap. The interesting experiences which the students could still recall prior to this study were likely to be included in their key incidents in learning English. The aspects of types of instructional tasks and the students' favourite classroom task could be followed after the students' reporting their key incidents in learning English.

The other aspect of the key incidents was the difficulties and solutions to overcome them. This aspect was potentially more difficult for the students to give responses. It was tacitly investigated in the later stage of interview by asking how to learn four language skills and the factors of learning English in Taiwan.

The last aspect required the students to reflect the usefulness of English in Taiwan. It seemed appropriate to ask this after all the aspects above had been reflected on. The students might therefore have a bigger picture of their learning English. With this bigger picture, their perspective on the usefulness of English in Taiwan is more likely to be balanced and revealed. If this aspect had been asked about at an earlier stage of this interview, the students' typical responses would be likely to be positive because of the expectation of the job market.

(iii-ii) Post-intervention interview questions

The post-intervention questions also changed.

Firstly, the question of improvement was changed into significant changes during the intervention. It was possible to involve a leading question regarding improvement, which might have suggested that the students needed to improve. Comparatively, the question of significant change would be more neutral and open-ended. The students might not be concerned with their reply of no change as much as the reply of no improvement.

Another interview question about key incidents was replaced by a task to list the five most important things that occurred during the intervention. This task would orient the students to reflect upon meaningful learning experiences during the intervention and assess their importance.

Secondly, interview questions used at stage one but removed in stage two were reused in this stage, with modifications.

The question regarding the students' definition of intellectual development was replaced by the question of whether Taiwanese students need high inborn intelligence in order to successfully learn English. Thus, the relationship between the students' perspectives on intellectual development and learning English in Taiwan could be explored. The students would be in a more context-relevant position to respond to the abstract concept of intellectual development. During the process of asking this question, the students would be encouraged (but not required) to give their own definitions of intellectual development. The next question involving the perspective on intellectual development was also asked in context. The students were asked to reflect whether during the intervention there was a change in their intellect area by their own definition of it. Thus, the influence from the intervention upon the students' perspectives on intellectual development would be revealed.

The aspect of intellectual development was important for foreign language learners. Without sufficient linguistic and cultural inputs, they often struggled in expressing their thinking with adequate English proficiency. The students were also often discouraged by a possible temptation to doubt their ability to learn to express their thinking in English. Another temptation was to perceive learning English as irrelevant to thinking. The discrepancy between English proficiency and thinking ability may introduce underestimation, particularly with a lack of understanding from native English speakers.

For instance, it may be difficult for them to understand why basic clear descriptions in English were not demonstrated and why some simple grammatical errors (e.g. misuse of the gender he and she) were constantly made among the foreign language learners with years of learning English.

The aspect of intellectual development was expected to explore the meanings of relevant teaching approaches among these foreign language students. These meanings may influence the students' motivation to learn English, particularly in a long term development.

The question of giving advice to the subsequent group in stage one was not asked in stage two because I focused on the students' personal improvement. This question was reused in stage three. Similar to that in stage one, this question would be effective to probe the students' perspectives on the influences of the intervention in stage three (see (v) Post-intervention questions in 3.4.1.2).

Thirdly, new questions investigating the students' specific perspectives on their learning experiences during the intervention were added. These questions included a comparison of individual versus group learning, most useful content learnt, and the favourite and least liked classroom tasks.

The post-interventional interview questions in stage three follow:

- Free response about the intervention course;
- Prioritisation of the five most important things which occurred during the intervention;
- The most useful instructional contents;
- The favourite classroom tasks;
- The disliked classroom tasks ('disliked' changed to 'less preferred' during interviewing process);
- Comparing learning between the individual and group style;
- Significant changes during the intervention;
- Keys to learning English reading and writing;
- Significant factors for learning English in general in Taiwan;
- The relationship between intelligence and learning English in Taiwan;

- Whether their intelligence was changed after the intervention course;
- Advice to the next semester's students; and
- Other thoughts.

There was a sequence arrangement of these interview questions. The first task in giving a free response was aimed at effectively extracting the students' perspective on the influence of this intervention. The task of prioritisation directed their thinking from a free response to key meaningful incidents. The aspects of instructional contents and tasks covered two main areas of the students' learning experience. Comparing individual and group learning allowed the students to reflect on their own learning. After reflecting on the above specific areas, the broad aspects of changes, keys to learning English and the aspect of intellectual development were explored. These aspects may be more substantially facilitated after giving responses to the specific aspects mentioned. For instance, the students might feel more able to give responses on the key to learning English in Taiwan and its relationship to intellectual development, after they had reflected on their own learning experiences in this study. In the final task, the students might give better advice based on the holistic picture established by the previous aspects.

As in stage two, the above first and last interview questions (i.e. with free responses) reduced the effects of social desirability (Coffield and Ridley, 1992) and power imbalance (Manias and Street, 2001, see (iii) Interview questions in 3.4.2.2). As in stage one, the twelfth question (i.e. giving advice) may reduce power imbalance (Manias and Street, 2001, see (v) Post-intervention questions in 3.4.1.2).

Furthermore, in the interview question about disliked classroom tasks, the first two students could not identify any tasks. They also commented that all the tasks were quite interesting. I immediately changed my approach and asked which the less preferred classroom tasks were. Therefore, the students were directed to reflect on the disadvantage aspect of classroom tasks. With this process, an attempt to decrease the effect of social desirability was made.

The key aspects of the pre-intervention and post-intervention interviews across the three stages are shown in Table 12.

Table 12: Key Aspects of Interview Questions across Three Stages

Stage	Pre-intervention Interview Questions or Inquiry Aspects	Post-intervention Interview Questions or Inquiry Aspects
I	(1) Key incidents in past experiences of learning English (2) Difficulties of learning English reading/writing (3) The instructional style in senior high school (4) The forms of assessment in senior high school (5) The students' definition of intellectual development	(1) The students' difficulties in learning in this study (2) Their advice to the next group
II	(1) Degree of interest in English reading and writing (2) Description of ability in English reading and writing (3) Key incidents in past experiences of learning English in general (4) Difficulties with English reading and writing (5) The student expectations of being instructed by the intervention course (6) The student individual targets to achieve the above expectations	(1) Free responses about the course (2) Lessons learnt in the intervention course (3) Difficulties in learning this course (4) Key incidents during this course (5) Areas the students wished to improve after the intervention course (6) Other thoughts
III	(1) Interesting experiences in learning English (2) Key incidents in learning English (3) Types of general instructional tasks (4) The students' favourite instructional task, its advantages and disadvantages (5) How to learn the four common language skills of English (6) The key to learning the above skills (7) Factors of successfully learning English in Taiwan (8) Whether the four language skills of English were useful in Taiwan	(1) Free response about the intervention course (2) Prioritisation of the five most important things that occurred during the intervention (3) The most useful instructional contents (4) The favourite classroom tasks (5) The disliked classroom tasks (6) Comparing learning between individual and group styles (7) Significant changes during the intervention (8) Keys to learning English reading and writing (9) Significant factors for learning English in general in Taiwan (10) The relationship between intelligence and learning English in Taiwan (11) Whether their intelligence changed after the intervention course (12) Advice to the next semester's students (13) Other thoughts

3.4.3.3 *My teacher-researcher diary*

In stage three I changed the timing and foci in writing my teacher-researcher diary. Rather than writing diary entries immediately after each lesson as in stage two, I reflected on the relevant lessons in stage three. I took notes after teaching similar analytical lessons to two groups and the creative lessons to the creative group. Then, I completed most of my diary entries after submitting the students' final marks for the intervention course. Thus, I was left with more quality time for my diary completion. During this writing process, I repeatedly listened to the audio recording of each of the above lessons and reflected on my teaching experience. My reflections were more profound and conveyed a more meaningful perspective than those in stage two. The number of entries in my teacher-researcher diary was thus reduced from fifty to thirty, but with much more substantial content. The average word account of my teacher-researcher diary was 4189.

The factor of classroom management, other than the research questions, was identified in stage one. The key areas for improving the quality of my teaching and research were identified after stage two. Thus, in stage three, my teacher-researcher diary was narrowed down to observe the influences of creative and analytical lessons between two groups. Along with this, changes to teaching and conducting research from stage two to three, and research difficulties unresolved in stage three were also written as reference information for further studies. The following four areas were listed on the top page of each diary entry before I wrote it:

- Description of major classroom tasks;
- Reflection on group differences;
- Changes from previous study; and
- Research difficulties.

3.4.3.4 *Other sources of evidence*

The other evidence was collected from the following five sources:

(i) On-line course survey;
(ii) The student reflection paper;
(iii) Telephone interview;

(iv) Marking; and

(v) The student work.

(i) On-line course survey

As in stages one and two, there was a 1 – 5 scale on-line course survey. However, rather than being compulsory, as in previous stages, this evaluation was altered to be optional in stage three. Also, the date of announcing this evaluation was about two weeks later than that in the previous two stages. This might have reduced the participation rate. The students might have been more reluctant to participate in this optional evaluation because of their anxiety prior to the final examinations in all subjects.

(ii) The student reflection papers

As in stage two, each student in both groups was required to write a semester reflection paper on the course, including both positive and negative feedback. The guarantee of confidentiality was also given in stage three. These papers would only be read after submitting the final marks to the university. In total, thirty-five out of the forty-two (83%) students responded from the analytical group, and twenty-nine out of the thirty-five (83%) students responded from the creative group. Sixty-four student reflection papers in total were collected from the two participant groups. The students were required to use word processing to write these papers. Unlike in stage two, all but two students chose Chinese to write their reflections. The length of their reflections was approximately 500 Chinese characters.

(iii) Telephone interview

In order to trace the possible influence of the intervention, I interviewed the subsequent teachers of both creative and analytical groups by telephone three months after the intervention. I asked these two teachers to describe the characteristics, the level of motivation and the learning attitudes and relevant disciplines of the group they taught. These two teachers were also encouraged to provide their explanations for the students' behaviour they observed. Each of these two telephone interviews lasted approximately ten minutes, including providing communication regarding the purpose of this telephone interview and assurance of confidentiality. The opportunity for these two teachers to make inquiries regarding this telephone interview was also offered.

(iv) Marking

I marked three essays for each student according to my own marking scheme. As described, the benchmark for each essay was to formulate a central idea for an essay and present four level of writing structure (see (ii-ii) Developing writing processes in 3.3.3). My version and the university version of the final tests was also a part of the students' final marks.

(v) The student work

There was a collection of creative writing from the creative group. The forms of creative writing included short responses to unexpected questions, creative stories and poems. This work was irrelevant to the students' final marks. Essays written by both groups, which were a part of the students' final marks, were also collected.

3.4.3.5 *Data synthesis of stage three*

As in the stage two, the data from interviews and the student reflection papers were analysed prior to my teacher-researcher diary to obtain knowledge from the emic perspective (Headland et al., 1990). However, the analysis in this stage focused more on the data from the interviews and my teacher-researcher diary. The student reflection papers were less emphasised because of their poorer quality than those in stage two. In contrast, the interviews were developed in depth and good quality data were obtained in this stage. Therefore, the interview data was given highest priority, followed by my teacher-researcher diary, the student reflection papers and other data sources.

(i) Semi-structured interview

There was a development in writing the pre-intervention and post-intervention interview reports.

(i-i) The pre-intervention interview report

There were five steps developed.

(i-i-i) I repeatedly listened to each of the pre-intervention audio recordings. During the listening process, I selected key points to write notes with their time indicators on a word processor. I then filed these notes in my computer.

(i-i-ii) The 'constant comparative analysis' (Padgett, 1998, p.77) technique was

applied. I inductively synthesised the key points of the above notes to develop the categories of the first index.

(i-i- iii) I reviewed the above index with the pre-intervention interview report in stage one and the synthesis report in stage two. I therefore identified similar themes or different but significant messages between this index and these two reports. Accordingly, I modified the first index.

(i-iiv) In order to analyse the data from the inquiry into learning English in Taiwan, I separated the relevant data from the above files of notes. From these relevant data, I synthesised similar data to formulate categories and thus formed the second index. I also calculated the numbers of students who gave a response for each category. I integrated the categories with a smaller number into those with greater numbers. Accordingly, I modified the second index.

(i-iv) Based on these two indices, I wrote a forty-six page pre-intervention interview report. The content table of this report demonstrates the development of sub-categories from the above two indices as thematic matrix.

(i-ii) The post-intervention interview report

Three steps were developed.

(i-ii-i) The first step was the same as for the pre-intervention interview report.

(i-ii-ii) I applied the technique 'constant comparative analysis' (Padgett, 1998, p77) technique. I repeatedly read the files of notes from the first step and categorised them into the following eleven indices. The indices mainly corresponded with the interview questions:

- Index 1: Free response;
- Index 2: Five important things;
- Index 3: Most useful content;
- Index 4: Favourite tasks;
- Index 5: Undesired task;
- Index 6: Group versus individual learning;

- Index 7: Creative task;
- Index 8: Practical tasks;
- Index 9: Change;
- Index 10: Learning English in Taiwan; and
- Index 11: Advice.

(i-ii-iii) I repeatedly read the notes in these indices in order to synthesise the meaningful responses. I also searched for similar messages in the synthesis report of stage two to integrate with the above responses. Thus, I wrote a 138-page post-intervention interview report. The contents table of this report can present the categories developed as a thematic matrix from the above indices.

(ii) The student reflection paper

The average length of 500 Chinese characters (i.e. half a page) in the student reflection papers was shorter than expected. The students would usually write more than this in their native language. Furthermore, their descriptions were more emotional than analytical. The students described various feelings, including:

> Easy, difficult, not difficult, nervous, glad, flattered, pressured, super, serious, easy-going, undefeatable, stale, solid and compact. (Student reflection papers of stage three, 64 students altogether from two groups, January 3 and 5, 2006)

The content of their analytical reflections were comparatively less. The quality of this data source was poorer than in stage two.

I read each of these reflection papers. During the reading process, I selected key points of each paper and translated them from Chinese into English in word processing. I then filed these key points in my computer. I repeatedly read all these files of key points, with the aim of identifying the students' comparisons between their writing experiences in this study and their secondary English education. I found the following similar themes among the students:

- Learning essay-writing;

- Progress in essay-writing from high school to higher education;
- The need for time management;
- Pressure from the intervention course; and
- A need for adjustment.

Furthermore, in contrast to stage two, some students wrote 'thank you teacher' on these reflection papers. Seven out of the thirty-five (20%) students in the creative group and seven out of the forty-two (17%) students in the analytical group wrote this phrase.

(iii) My teacher-research diary

The technique of 'a long soak' (Smith et al., 1975) was applied to the data analysis in my teacher-researcher diary. I repeatedly read my diary entries with the aim of extracting meaningful information from these diary entries. I further reflected on these diary entries, and synthesised my reflections with the other two primary data sources of stage three:

- Post-intervention interview report; and
- Files of key points from the student reflection papers.

As mentioned above, priority of emphasis between these data sources was firstly interview, secondly my teacher-researcher diary, and thirdly the student reflection papers. Thus, I wrote reports on the following aspects:

- Methodology (18 pages);
- Findings (60 pages);
- Theory and practice (55 pages);
- Pedagogy (22 pages); and
- Stages of Development (12 pages).

In the Pedagogy report, the features of analytical, creative and practical intelligence (Sternberg and Grigorenko, 2000) were applied as a framework to analyse further classroom activities into types of intelligence tasks.

In the Findings report, I synthesised the relevant data from:

- The post-intervention interview report of stage three; and
- Telephone interviews with the subsequent teachers of the two groups.

This report included differences between the analytical and creative groups in the following areas:

- Motivation;
- The relationship between learning attitudes and relevant disciplines, self-study, time management and level of pressure;
- Achievement;
- Perspectives on English writing; and
- Perspectives on learning English in Taiwan.

(iv) Measurement

Using the computer software, Excel, the average marks of the essays and the two final tests in both groups were calculated.

3.4.3.6 *Synthesis across stages*

There were two dimensions in this synthesis from stage one to three:

(i) My pedagogic changes; and
(ii) The students' similar and different learning experiences.

(i) My pedagogic changes

The main data source for my pedagogic change was my teacher-researcher diary entries. In order to synthesise the data from my teacher-researcher diary across three stages, I used keyword searching on the computer software Microsoft Word to identify the relevant diary entries about curriculum development and my teaching. I displayed these diary entries in stage one, two and three. Therefore, the differences in curriculum and teaching across the stages were presented. The following aspects were identified in curriculum development:

- Development of lessons for analytical intelligence;
- Development of lessons for creative intelligence;
- Workload; and

- Process of development.

The aim of this study was to obtain knowledge from the teaching and learning experiences in the creative and analytical approaches. As a teacher-researcher, an improvement in the quality of my teaching was also expected, and also influenced the quality of my research.

With various research tasks during the intervention, my teaching performance was possibly more carefully observed by all the students. Their motivation in participating in research tasks would have been reduced if the quality of my teaching had been poor. For the same reason, their responses to the research tasks would have been affected. Furthermore, without teaching approaches of a satisfactory quality, the influences of creative and analytical teaching might not have been demonstrable. How to improve the quality of my teaching was less relevant to the knowledge which the research questions were aiming to obtain. However, this quality would have influenced the accessibility (of the students) to obtaining this knowledge and would have interfered with the students' responses. Regarding the role of facilitating the appropriate students' responses, the findings regarding the improvement in the quality of my teaching were included in this chapter—Methodology. The discussion follows.

In light of the reflection on stage two (see (i) Teaching in 3.4.2.5), significant changes in my teaching occurred in stage three. I adopted the following strategies to establish a trust relationship with the students before and during teaching the intervention.

(i-i) Before the intervention

As in stage two, the value of the teaching approach to intellectual development was introduced in stage three (see (iii-i) General aspect in 3.3.7). Also, I showed the students the pack of lesson plans for the entire intervention to demonstrate that the intervention was fully prepared. I demonstrated a higher average mark in my version of the final test after the the intervention in both groups of stage two. I also shared a story of a student in stage two. She credited her results in the GEPT test to what she had learnt in this intervention course:

> …after I attended the GEPT test…[While reading the test] I found I got the key to find thesis statement [i.e. the central idea] which had been

> emphasised many times by my teacher. (Student reflection paper of stage two, Student A, June 10, 2005)

Hearing the successful experiences from the participant groups in stage two, the students presented a highly positive attitude towards this course. They quickly signed their consent forms and also had only a few queries about this course.

(i-ii) During the intervention

The quality of my teaching improved in the following aspects:

(i-ii-i) My speech;
(i-ii-ii) My authority;
(i-ii-iii) My sensitivity; and
(i-ii-iv) My teacher-researcher image.

(i-ii-i) My language

I avoided using any negative language. I did not complain that the students did not hand in an assignment on time. I even avoided reminding them to fulfill requirements in order not to be failed, as I did in stage two:

> S: Teacher, you were talking to everybody. You just mentioned very few times. But, to me, personally, this [i.e. the reminding of the baseline of assessing essays] make me feel particularly heavy.
> (Post-intervention interview of stage two, Student A, June 10, 2005)

I changed my language to be positive in this stage. I encouraged the students as much as possible. I was also more aware of the possible tension among the students because of the misunderstanding between my intention to give clear instructions and the Chinese tendency towards employing implicit communication. I had softened my manner of speaking. My speech was slower. I reminded myself to smile and make more eye contact with the students. I was more patient and careful about my language. However, when I corrected the students, my language seemed easily criticised. Some of them still felt that I was too direct in my language:

> S: When there was a mistake, [the teacher] would immediately point

out…

…

S: …I personally felt that [the teacher] just pointed out the mistake. Just straightforwardly said it.

T: Then, an impression that I blamed your peers will be made just [because of] the straightforward style?

S: Hum. (i.e. yes; Post-intervention interview of stage three, Student B, January 6, 2006)

(i-ii-ii) My authority

In stage two, I looked strict but was actually nervous in learning to balance the role of the teacher-researcher:

> [In stage two] I felt extremely intense and nervous inside. (My teacher-researcher diary of stage three, December 15, 2005).

Having gained knowledge of the students' severe criticisms and their distorted understanding of me in stage two (see (i) Teaching in 3.4.2.5), I used my teacher's authority more effectively in stage three. For instance, as a teacher I gave a talk when the students needed it. I encouraged the creative group to make a new start when many of them obtained a poor score at midterm:

> This is the first time of introducing creative writing to the students. I started with a good reason—making a change after the poor performance on midterm. (My teacher-researcher diary of stage three, November 21, 2005)

Regarding the use of class time:

> In the previous two pilots, I often taught over the class time and asked the students to give me extra time from their break to finish my lesson…in this semester [i.e. stage three]…I let the students go a few minutes before the bell rang. (My teacher-researcher diary of stage three, October 6, 2005)

The entire class observed that I was not conditioned by the bell system and made a sensible decision on completing the task, without using their break time.

Also, I demonstrated my authority by emphasising the baseline for passing this course:

> In the previous stages [i.e. stage one and two], I only stated the importance on formulating a central idea. However, [in stage three] I declared the basic standard to get a pass in essay one was formulating a central idea… (My teacher-researcher diary of stage three, October 6, 2005)

(i-ii-iii) My sensitivity

I was more aware of the complexity in an ordinary classroom from the teaching experiences in stage two. For instance, in stage three:

> After the warning [the students not to skip the class], two students…dropped out and one [i.e. another one]…made improvement in attending class…The same warning caused different reactions among the students. The complicity of teaching was presented. (My teacher-researcher diary of stage three, November 14, 2005)

I understood that the students' reaction in the classroom scenario might arise from many factors. My teaching might not be the only explanation for their behaviour in the classroom. With this understanding, I was calmer and less negative towards the students' possible complaints, criticisms and misunderstanding in stage three. Furthermore, I started to appreciate the privilege of understanding from the students' perspective. For instance, I perceived that this intervention demanded much higher intellectual development than that of the students' former learning experience:

> Initially I really did not like my strict teacher,…but after four months I changed my mind. The improvement was worthy of the hard time it cost…Thanks to Miss Lo's teaching! (Student reflection paper of stage two, Student D, June 8, 2005)

As a teacher-researcher, I should have foreseen their struggle and also endured their

dissatisfaction when the students had not yet achieved and perceived their learning progress. This understanding freed me to perceive the students' responses appropriately, rather than blaming myself as their teacher. Through reflection, I concluded that the students and I were in two cultures, teachers versus the students, and maturity versus youth:

> It [i.e. teaching a lesson] was a cultural thing, including their …the student culture … I need to break through the cultural barriers. (My teacher-researcher diary of stage three, November 7, 2005)

This cultural comparison brought a more holistic understanding of the differences between me and the students. My patience regarding accepting these differences therefore grew.

(i-ii-iv) My teacher-researcher image

In stage two, my teacher-researcher image from the students' perspectives was being responsible, well prepared and professional:

> ...she [me as a teacher] is responsible and do [i.e. does] her best to prepare the course. (Student reflection paper of stage two, Student A, June 10, 2005)

yet somehow strict:

> The teacher gives me a hard-hearted image… (Student reflection paper of stage two, Student B, June, 8, 2005)

In order to change this strict image and improve the relationship with the students, I changed my speaking as mentioned and provided flexibility in teaching. I allowed extensions to homework deadlines, rather than being strict on the prescribed point of time.

> I had not fixed on deadlines as strictly as the last semester…for the student's sake, I delayed the deadline for several days [in stage three]… (My teacher-researcher diary of stage three, December 27, 2005)

I was more willing to endure the extensions and collected the students' repeated assignments several times:

> In the compacted curriculum, [handing in assignments] several days [delayed] meant a lot more pressure to and sacrificed my weekend. (My teacher-researcher diary of stage three, December 27, 2005)

This demonstrated my care for the students' learning involving other subjects, rather than only in this intervention. The students were appreciative and responded with the following learning behaviour:

> …the students…expressed their special thanks by not skipping my classes…handing in their assignments on time [in extended deadline] and seriously studying for the finals. (My teacher-researcher diary of stage three, December 27, 2005)

This caring image dissolved my previous strict image.

> …[My] care [for students], not [my] teacher's power, worked well among students. (My teacher-researcher diary of stage three, December 27, 2005)

This image restoration may also dispel the students' suspicions that they are being utilized for the purpose of research as those in stage two. This may explain their higher willingness to participate in the interviews in stage three than in stage two.

In conclusion, on the 1 – 5 scale of on-line course survey, the averages from stages two to three were increased (see Table 13).

Table 13: On-line course survey (stages two to three)

Average	Analytical Group	Participation	Triarchic Group (stage 2)/ Creative group (stage 3)	Participation
Stage II	2.68	91% (compulsory)	3.25	92% (compulsory)
Stage III	4.27	54.54 % (optional)	4.24	71.05 % (optional)

The above increased averages indicate that the students' satisfaction with my teaching was improved from stage two to three. The above two averages (4.27 and 4.24) were near the highest score of five. This suggests that both groups' satisfaction in my teaching was at an acknowledgeable level in stage three. Along with the above data from my teacher-researcher diary, the quality of my teaching was improved from stage two to three and achieved a satisfactory level. This was also supported by the positive responses from the students in the post-intervention interviews (see the chapter on Findings).

(ii) Comparing the students' learning experiences

The students' experiences were compared in their:

- Similarities; and
- Differences.

(ii-i) Group differences

In order to reconfirm the relevancy between the Findings report (see (iii) My teacher-research diary in 3.4.3.5) and raw data across the three stages, I synthesised data in the following steps.

(ii-i-i) I identified the keywords from the five areas of group differences in this Findings report:

- Motivation;
- The relationship between learning attitudes and relevant disciplines, self-study, time management and level of pressure;
- Achievement;
- Perspectives on English writing; and

- Perspectives on learning English in Taiwan.

Then, I inserted these keywords into Microsoft Word to relocate the relevant entries in my teacher-researcher diary across the three stages.

(ii-i-ii) I listened again to all the audio recordings of the post-intervention interviews in stage one. During the listening process, I selected key points from these recordings with the aim of identifying similar messages as in the Findings report. I then wrote notes using word processing. Also, from the above key points, I selected some that demonstrated the significant messages. I then word processed the relevant transcripts. Thus, I wrote the stage-one extracts, next, I reduplicated the above process to write the stage-two extract.

(ii-i-iii) I revisited the following sources:

- The Findings report;
- The relocated teacher-researcher diary entries across the three stages;
- The extract from stage one; and
- The extract from stage two.

After this revisiting, I made a file which consisted of qualitative data across the three stages for each of four areas (except for achievement) in group differences. Within each of these files, the relevant raw data and descriptions from my teacher-research diary and post-intervention interviews were displayed according to stages. In contrast, the file for achievement consisted of the numerical data from marking and the collections of the student work in stage three.

(ii-i-iv) I further reflected upon each of the above files and reread the Findings report. As a result, I added the data into the area of ‘The relationship between learning attitudes and relevant disciplines, self-study, time management and level of pressure’ for further analysis. The sources of the added raw data were my marks for essays and the university version of the final test.

(ii-i-v) I modified the Findings report through my reflections on the five files and added raw data. The data sources across stages in each of five areas of group differences are

shown in Table 14.

Table 14: Data sources in group differences

Area / Stage	I	II	III
1. Motivation	Diary	Diary Interview	Diary Interview Telephone interview
2. The relationship of pressure, learning attitude and discipline, the influence of self-study and time management	Diary Interview	Diary Interview	Diary Interview Assessment of achievement
3. Achievement	X	X	Marking Student work
4. Perspective on Writing in English	X	Interview	Interview
5. Perspective on Learning English in Taiwan	X	X	Interview

Notes:
X indicates no data. The five areas were identified in the Findings report (see (iii) My teacher-research diary in 3.4.3.5). The data sources in each of five areas were adopted through the above process of synthesis.

(ii-ii) Group similarity

The comparison of learning experience between the two groups in the research design suggested an attempt to identify differences in the students' learning experiences. However, the similarities between the two groups were also important in terms of understanding the influence of the analytical teaching approach. Particularly, there was a significant portion of common analytical lessons between the two groups. With this aim, I reviewed and reflected on the following data sources:

- Stage-one extract;
- Stage-two extract; and
- Files of the five areas of the Findings report.

By this process, the following similar recurrent messages across the three stages were identified:

- Writing skills learnt;
- The importance of time management; and
- A need for an adjusted process.

This process should conclude the data analysis of this study. However, I adopted the strategy of looking twice at a case study (Lundeberg and Scheurman, 1997), and reviewed all the reports through all the above processes of data analysis. My perspective was therefore re-sharpened to perceive the influence of Chinese culture, which had been overlooked in the above first-time case study. During the post-intervention interviews of stage one and two, the students reported the importance of the comparison between writing structures in English and in Chinese. This knowledge was integrated in my teaching in stage three. Therefore, there were no responses to this effect from the students during the post-intervention interviews of stage three. Also, I prioritised data from the students' perspective. Thus, I overlooked the influence of Chinese culture in stage three, which was only from my teacher-researcher diary. This concluded the entire process of data analysis.

3.4.3.7 *Overall reflection and summary*

In this study, self-reflection (Carr and Kemmis, 1986) played a crucial role in all of data collection, analysis and synthesis in order to tell a meaningful story. Carr and Kemmis (Carr and Kemmis, 1986) suggested that an action researcher should take the responsibility to free him/herself from former understanding. Accordingly, I sought new understanding, even if they were contradictory to 'traditions or common sense' (Huttunen and Heikkinen, 1998). Furthermore, the process of self-inquiry in this study was spiral. It was not as straightforward as to be regularly circumscribed in a single dimension as most people would have expected. In contrast, the research questions were the central vehicle to bring dynamic changes from many directions.

For instance, in stage one, the difficulty of developing a new test was found. In stage two, my distorted image of the students' misunderstanding was also explored. The inappropriateness of the research paradigm which affected my teaching was discovered. The failure of developing lessons for practical intelligence was concluded, and thus the research questions were changed. In stage three, the influence from Chinese culture was eventually identified. The changes regarding the methodology of this study are as follows:

- The approach of investigating the influences between triarchic and analytical teaching was more focused by (a) ceasing seeking the students'

perspectives on intellectual development and (b) with awareness of the importance of classroom management;

- Measurements;
- Research questions;
- Need to improve the quality of my teaching;
- Research paradigms;
- Interview questions before and after the intervention across three stages;
- Foci of my teacher-researcher diary;
- New data collection regarding research paradigms;
- Data reanalysis in improving the quality of interviewing;
- Different prioritisation of data sources according to the quality of data obtained;
- The data synthesis from group differences to group similarities; and
- The detection of the influence from Chinese culture after looking at the entire data analysis the second time.

All of the research techniques, reports, principles and relevant decisions across three stages are summarised in Table 15.

Table 15: Research processes across three stages

Stage	Data Sources		Data Analysis	Data Synthesis	Decision or production
I	1. My version of the Triarchic Theory of Intelligence-based test before the intervention		Ignored		
	1.1 First pilot test		Reviewing the students' responses	Not applicable	Selecting the test format and contents, designing test items
	1.2 Second pilot test				1.Decreasing test content 2.Removing problematic test items
	2. Written reflections on the above new test before the intervention		Identifying key concepts by similar key words	A 6-page summary report	Stopping the developing the new test
	3. Semi-structured interview	Pre-intervention	Repeatedly listen to audio files and taking notes for each of them	A 17-page summary report	Change the interview focus and questions
		Post-intervention	Repeatedly listen to audio files	Identifying the similar message from diary entries	1. Including the students' time manage in the extension of the interventional influence 2. Obtain personal experiences rather than general descriptions before the intervention 3. Obtain information on whether the intervention is helpful in the students' learning, rather than intellectual development
	4. My teacher-researcher diary: Six entries focused on key incidents and the students' general reactions		Reviewing	Not applicable	1. Including classroom management in the extension of the interventional influence 2. Change the focus more closely to the interventional influence
	5. On-line course evaluation		By university computer and saving the raw data for comparison		
II	1. University language placement test before the intervention		Ignored		
	2. My version of the language test before and after the intervention				
	3. *The College Academic Aptitude Battery*(from the publisher) before the intervention				
	4. The university version of final test				
	5. Semi-structured	Pre-	Repeatedly listen to audio files and	Identifying recurrent messages	None

	Interview	intervention	taking notes from each of them	across stage one and two	
		Post-intervention	1.Repeatedly listen to audio files and taking notes from each of them 2.Counter case analysis	Identifying similar messages with the student reflection papers	1.Remove the disconfirming evidence 2.A 30-page synthesis report of stage two, in which themes emerged from each of the triarchic and analytical groups, rather than standarised group comparisons 3.To improve the quality of my teaching
	6. My teacher-researcher diary: Fifty entries focused on key incidents, my self-evaluation on teaching and experiences of problem solving		Long soak	Identifying similar messages within the student reflection papers and post-intervention interviews	
	7. The student reflection papers		1. Prioritised for emic perspectives from targeted insiders 2. Constant comparative analysis in open coding 3. Modifying the categories and developing a thematic matrix	A framework identifying similar messages with other sources in the same stage	
	8. On-line course evaluation		By university computer	Comparison from stage one to two	To Improve the quality of my teaching
	9. Audio course recording		Taking notes, searching relevant parts, re-listening	Providing relevant raw data for the summery report of stage two	--
	10. My teacher-researcher diary: Fifteen new entries focused on the research paradigm		Long soak	1.Re-read the relevant information in the above interviewing, the student reflection papers and my diary 2. Identifying similar messages	To change this study from scientific, quasi-experimental to interpretative-qualitative research paradigm
	11. All the pre-intervention and post-intervention interviews in both stage one and two		Recollecting data by listening to the original audio interview files again with a different aim of improving the quality of my interviewing		To improve the quality of my interviewing and develop in-depth interviews
			Self-practice of re-asking the same interview questions several times, as if facing an invisible interviewee in the next stage		A 42-page report of interviewing, including 296 ideas to modify my interviewing.
III	1 University language placement test		SPSS, T-test	Not applicable	Group difference before the intervention
	2. My version of language test before and after the intervention		SPSS, T-test	Not applicable	No Group difference before the intervention

	3. *The College Academic Aptitude Battery* before the intervention				
	4. Semi-structured interview	Pre-intervention	1. Prioritised for emic perspectives involved and the quality of data 2. Repeatedly listen to audio files and taking notes from each of them 3. Constant comparative analysis to develop two indices 4. Modifying the categories and developing a thematic matrix	Identifying the recurrent messages from: 1. Pre-intervention interview report of stage one 2. Synthesis report of stage two	A 42-page pre-intervention interview report
		Post-intervention	1. Prioritised for emic perspectives involved and the quality of data 2. Repeatedly listen to audio files and taking notes from each of them 3. Constant comparative analysis to develop 11 indices, corresponding to interview questions 4. Modifying the categories and developing a thematic matrix	Identifying the recurrent messages from the summary report in stage two	A 138-page post-intervention interview report
	5. My teacher-researcher diary: Thirty entries focused on: Description of major classroom tasks; Reflection on group differences; Changes from previous study; and Research difficulties		1. Relocating the relevant entries by keyword search in Microsoft Word. 2.Displaying these entries together in three stages	1. Identifying the recurrent messages from my diary across three stages 2. Identifying similar messages in post-intervention interviews and the student reflection papers in stages two and three. 3. The students possibly demonstrated higher willingness to participate in interview in stage three than in stage two 4. Comparing averages of on-line course evaluation from stage two to three	To conclude: 1. the quality of my teaching improved from stage two to three, 2. this quality was satisfactory in stage three
			Long soak	Identifying similar messages from the post-intervention interview report in stage three and data from telephone interviews	1. An 18-page Methodology report 2. A 60-page Findings report 3. A 55-page Theory and Practice report 4. A 22-page Pedagogy report 5. A 12-page Stages of Development

				report
	6. On-line course evaluation	By university computer	Statistics from stage two to three	Same as the above 5
	7. The student reflection papers	1. Translating keywords into English 2. Defining the key concepts by similar keywords	Included in the report on Pedagogy	None
	8. Telephone interview	1. Took notes during the process 2. Quoting the words spoken by the subsequent teachers	Included in Motivation	Modifying the Findings report
	9. Marking of essays	1. My marking scheme 2. Excel, calculating averages	Included in The Relationship of Level of Pressure, Learning Attitudes and Relevant Disciplines, and the Influence of Self-study	Modifying the Findings report
	10. The university version of final test	1. SPSS, ANOVA 2. Significant difference between two groups (one-tailed)		
	11. The student work	--	Included in Achievement	
	12. My teacher-researcher diary in all three stages and the post-intervention interview in stages two and three	1.Reread diary entries 2.Listening again to audio files and writing stage-one and stage-two extracts 3.An analysis of 'What is learnt' by identifying similar message from these two extracts 4.Display relevant data for each area of group differences in a file with three stages 5.Reviewing the above files		Modifying the Findings report
		Reviewing again the above two extracts and the files of five areas of Findings report		Adding the messages of group similarities across three stages in Findings report
		Looking twice at a case study by reviewing all the previous reports		Adding the influences of Chinese culture in Findings report

Chapter 4 FINDINGS AND DISCUSSION

The purpose of this chapter is to report the findings of the research questions:

1. To what extent am I, as an English teacher, able to draw upon the creative and analytical teaching approaches to devise meaningful learning activities?
2. How will the students respond to these learning activities?

4.1 THEORY INTO PRACTICE

This study attempted to apply the Triarchic Theory of Intelligence (Sternberg, 1985) to the teaching of English reading and writing in a Taiwanese university. In the Methodology chapter, the difficulty of this application regarding seeking appropriate example lessons and the relevant strategies were discussed. With this difficulty, lesson planning for facilitating analytical and creative thinking was developed; but that for practical intelligence failed. The research questions were therefore changed to compare the creative and analytical teaching approaches. Before discussing this comparison, a general discovery should be noted. The application of this study was limited because of the nature of teaching English reading and writing. Teaching essay-writing was prioritised over teaching reading (see (ii) Constraints in 3.3.7). Lessons for English grammar and writing structure were necessary for the students to establish their ability to write English essays. Teaching these lessons was essentially an analytical process:

> …such as different sentence structures, passive voice, parallel structure, …were instructed by explanations, examples and relevant exercises... (My teacher-research diary of stage three, December 13, 2005)

Developing lessons for grammar and writing structure using the creative thinking approach could violate the common use of language. This might also introduce a danger of changing the focus from teaching the English reading and essay-wring to teaching the type of thinking skills, rather than the instructional contents.

4.1.1 Lessons for analytical thinking

The integration of analytical thinking into teaching English essay-writing was focused on facilitating problem-solving. There were six features of problem-solving in analytical intelligence (Sternberg and Grigorenko, 2000). As predicted in the lesson planning, it was necessary to select and focus on some of these features in the study:

> …applying all six features to a lesson seemed not only unwise, but also impossible… (My teacher-researcher diary of stage three, December 1, 2005)

The selection avoided the danger of planning lessons for essay-writing in an unreasonable schedule:

> I only applied some of them [i.e. analytical intelligence features] in a lesson and tried to move on further [in this course]. (My teacher-researcher diary of stage three, December 1, 2005)

The above danger may have introduced the inefficiency of achieving the instructional goal—cultivating the students' ability in English essay-writing. This inefficiency might have risked the students' sense of accomplishment and also their motivation for continuing learning during this study.

The 'Identify Problems', 'Present and Organize Information' and 'Evaluate Solutions' features (Sternberg and Grigorenko, 2000) were focused on in this study. There was a key finding in the integration of these features with essay-writing lessons:

> A discrepancy between applying the definitions of these features in teaching Chinese students.

The discussion on this discrepancy is as follows.

(i) Identify Problems

This feature is defined as:

> …to encourage students to formulate and ask questions, not just to answer them. Teacher should encourage students to pose what they see as fundamental questions… (Sternberg and Grigorenko, 2000, p.42)

The initial task for the students to learn to write an essay was to formulate a central idea for the essay. The ability to participate in dialogues of inquiry during the lesson was emphasised in order to facilitate the students to ask and answer questions. In classroom practice, the students were somehow reluctant to give responses in a public scenario:

> It was typical for Chinese students to remain in silence while the teacher…ask them a question…(My teacher-researcher diary of stage three, October 6, 2005)

> It was a typical for Chinese students not to talk or give their opinions in public. (My teacher-researcher diary of stage three, October 17, 2005)

The inability to 'ask questions' might have developed through the process of coping with national testing in the students' secondary education:

> …these students might not have an opportunity to ask questions in their high school education. (My teacher-researcher diary of stage three, October 27, 2005)

However, it seemed reasonable to expect that their tendency to 'answer a question' had been cultivated by giving responses in practicing test skills. The above phenomenon of not giving responses needed to be interpreted by another factor.

The influence of Chinese culture was identified:

> Chinese students need a design to legislate their talking and release their pressure from public speaking in the class. (My teacher-researcher diary of stage two, April 29, 2005)

In my observation, the ability to ask a question sometimes did not seem to be a problem:

> [I] felt the students might know the problem [i.e. the answer to the question asked] before I facilitated them. They were hesitating to speak out. (My teacher-researcher diary of stage three, October 27, 2005)

Collectivism, power distance and the sense of shame of Chinese culture were found to be relevant to the above reluctance:

Firstly, collectivism is the tendency towards group, rather than individual, behaviours. It was identified in interpreting the above phenomenon:

> The typical Chinese culture, collectivism, meant that no one wanted to break the ice [in public communication]. (My teacher-researcher diary of stage three, October 24, 2005)

> …Chinese students…had been socially controlled not to defy the crowd to maintain the value of harmony… (My teacher-researcher diary of stage three, October 27, 2005)

Not giving an individual response was a way of sustaining the collectivism. This was concurrent with the following interpretation:

> In the collectivism-oriented Chinese society…the ability to engage in discussion and argument which individualistic societies uphold are not always good behavioural norms they have grown up with. (Qing, 2008, p.84)

Secondly, the above collectivism was often strengthened by another characteristic—great distance from authority (e.g. detachment from a teacher). The above dialogues for inquiry were not only undertaken in a public scenario, but also in front of an authority figure, a teacher:

> The great power distance…hinders their [the students'] interaction with the teacher… (My teacher-researcher diary of stage three, October 31, 2005)

This phenomenon of power distance was supported by a cultural comparison:

> The distance of accepted power between teacher and student within Asia (i.e. collectivistic) society is much wider than it is in the West (i.e. individualistic society). (Govea, 2007, p.9)

Thirdly, a sense of shame (i.e. the feeling of being inferior) in Chinese culture seemed to reinforce the above two characteristics:

> Their direct [i.e. immediate] reaction [i.e. responses] to my question would…cause tension…other students may feel that they lose face because of [their] lack of so-called good performance. (My teacher-researcher diary of stage three, October, 27, 2005)

This interpretation was similar to that of another researcher of Chinese culture:

> In the…Chinese society, a student's educational failure means significant shame… (Ying, 2001, p.411)

Within the trait of collectivism, the above risk of causing others to feel inferior and not to risk humiliating himself/herself by giving an inappropriate pubic response tended to be a concern among Chinese students.

Accordingly, co-existent collectivism, greater distance from authority and a sense of shame seemed to better explain the reluctance to give public responses among Chinese students.

Small group discussions were designed to decrease the above reluctance:

> I need to find a way to emancipate them [i.e. the students] from the Chinese cultural restrains…I have…an idea of group discussion… (My teacher-researcher diary of stage two, March 17, 2005)

In small group discussion, the level of publicity was reduced. The power distance was decreased from a teacher to that of a peer leader. However, these only solved the

problem to a certain degree:

> S: ...everybody wanted to rely on others [in small group discussion]… (Post-intervention interview of stage three, Student A, January 5, 2006)

> S: Some people just would not express their ideas [in small group discussion]. (Post-intervention interview of stage three, Student B, January 5, 2006)

More teaching strategies were developed to counter deleterious aspects of Chinese culture. Most of them were intuitive solutions developed from the interactions with the Chinese students during lessons.

- Modelling sufficient questions asked by the teacher;
- Asking the students easy questions in order to establish successful experiences;
- Giving more waiting time for the students' responses;
- Immediate positive feedback for the first few students giving responses to encourage other students;
- Articulating and constantly reminding the students to be free from the tendency to compare themselves to each other, in order to reduce the influence of Chinese culture;
- Arousing their awareness of uttering questions by asking them, 'Is there a problem?';
- Exchanging the role of an asker as a teacher with the students by having them to respond to: What questions do you think I (i.e. the teacher) will ask?;
- Asking the students to give reasons for their ideas in order to guide them to discover the logic of what they really wanted to express;
- Having leaders of small groups ensure that every member expresses ideas in discussions, rather than loading the responsibility onto themselves; and
- Assigning a writing task to small groups or individual students (i.e. publicity reduction) before the oral communication in a public scenario, in order to abridge this public communication.

The lesson of formulating a central idea for the students' first essays was more interactive when most of the above strategies were utilised. The students' learning in the discussion process of this lesson laid a good foundation for continuing the other lessons. The students were required to formulate the central ideas for their second and third essays more independently. In the second and third essays, I changed from the above facilitating the students' talk to only asking a few key questions and being available to the students as a consultant.

(ii) Represent and Organise Information

The feature is defined as:

> …presenting and organizing information, helping students show their thinking in a concept map or outlines. (Sternberg and Grigorenko, 2000, p.46)

This feature was directly applied to the step of organising ideas for essay-writing. The students were required to use concept maps and make outlines to organise their ideas. However, only providing concept maps and teaching how to categorise ideas was insufficient for Chinese students. Their logic was affected by the writing structure of Chinese essays (Chu, 2005). A similar observation was found in this study:

> The different logical sequences, in which the Chinese emphasise the end and the English the beginning, would confuse the students… (My teacher-researcher diary of stage three, November 10, 2005)

The students needed to be taught the logic sequence: formulating a central idea first and introducing it in the first paragraph of their essays. In order to avoid the pitfall of stating the central idea at the end of an essay, which was duplicated from the Chinese writing structure, I used a metaphor of building a house:

> 'Is there anyone who wants to build a house from the roof?' and everybody was silent…[I said] 'starting an essay with the central idea statement is like building a house from the foundations'. (My teacher-researcher diary of stage three, November 10, 2005)

The above metaphor effectively communicated the idea of the logical sequence in English essays. Their non-verbal behaviour during and after this lesson demonstrated their deep appreciation:

> …they [i.e. the students] maintained silence, their facial expression appeared amazed, and watched me leave the classroom [i.e. a way to show respect to the teacher]. (My teacher-researcher diary of stage three, November 10, 2005)

Their responses to the following inquiry presented their common understanding:

> 'What is the first question I will ask you while you read an [English] article?' After a few seconds…the students responded, 'The central idea'. (My teacher-researcher diary of stage three, November 10, 2005)

(iii) Evaluate Solutions

This feature is defined as:

> …explicitly asking students to comment on the strengths and weakness of their own work and that of others and emphasize the constructive critiques. (Sternberg and Grigorenko, 2000, p.51)

In facilitating this feature, the influences of Chinese culture were considered:

> …to exercise this feature, I need to break through the [Chinese] cultural barriers. (My teacher-researcher diary of stage three, November 7, 2005)

The requirement of the above definition of 'explicitly asking the students to comment' on each other could be intrusive among Chinese students, particularly in a public scenario:

> …East Asia students will be reluctant to 'stand out' by expressing their views…particularly if this might be perceived as expressing public disagreement. (Littlewood, 1999, p.84)

The cultural preference of harmony discussed in 'Identify Problems' (see above (i) Identify Problems) were likely to pressurise Chinese students in the above requirement of giving comments to others. Similarly, Japanese students in higher education resisted expressing their negative values in comparison two cultures (Houghton, 2007).

The tendency to have a sense of shame could easily jeopardise the application of this feature:

> Chinese students tend to be more sensitive and remembered the criticism/failure rather than praises/success. (My teacher-researcher diary of stage three, November 22, 2005)

The ultimate but implicit goal of this feature is learning from others' comments. A report for self-evaluation was therefore devised to remove the above cultural barrier. For each of the three essays, the students were required to list the mistakes and the relevant improvement in the following aspects:

- Ideas and organisation;
- Grammar and expression;
- Vocabulary;
- Punctuation; and
- Other areas.

Also, the writing partner of each student might have played a similar role without the tension from Chinese culture:

> I had them [i.e. the students] discussing…with their writing partners…. The students got fervently involved in this discussion. (My teacher-researcher diary of stage three, November 3, 2005)

Giving feedback to each other would have naturally occurred in the discussion with the student's writing partner. The importance of seeking help from the writing partner was reported several times by the students:

> …[the students] sharing their successful experience…the importance

> of…discussing with the writing partner. (My teacher-researcher diary of stage three, November 22, 2005)

I also adopted a strategy of voting for the best presentation in order to direct the students to observe their peers' work. Specifically, note-taking was suggested to engage the students during this observation and therefore learning from others' work.

All the above strategies were attempts to reduce the possible tension resulting from Chinese culture. With the same goal of making progress in the above definition of 'Evaluate Solutions' (Sternberg and Grigorenko, 2000), these strategies were much more appropriate and gentler for Chinese learners.

4.1.2 Lessons for creative thinking

Creative writing and the task of inner-voice theatre were designed to facilitate the students' creative thinking. Some crucial points in teaching creative writing were discovered. In contrast, the task of inner-voice theatre was recategorised from creative intelligence to practical intelligence.

(i) Creative writing

With only four periods (i.e. each period was fifty minutes) of intervention, teaching creative writing was limited to introducing the initial experiences to the students:

> It was only an initiation to provide the students opportunities to experience creative writing. (My teacher-researcher diary of stage three, November 21, 2005)

The selected creative intelligence features were 'Generate Ideas' and 'Sell Creative Ideas' (Sternberg and Grigorenko, 2000). The findings of the creative lessons are as follows:

(i-i) Generate ideas

Adopting various strategies to facilitate the students to generate ideas (see (i) My teaching in 3.3.4.3), I found the following three aspects worthy of consideration when teaching:

(i-i-i) Visual imagination;
(i-i-ii) Non-threatening learning environment; and
(i-i-iii) Interference from the students' native language.

(i-i-i) Visual imagination

With the basic form of brainstorming (Osborn, 1979), the use of pictures as an aid to visual imagination was found effective in facilitating the students' creative thinking:

> …they [i.e. creative group] listed out many creative ideas from the three pictures… in the brainstorming task. (My teacher-researcher diary of stage three, November 21, 2005)

As a teaching aid, the visual form may be more useful than the linguistic form, particularly for these foreign language learners. Using the pictures in the above task removed possible linguistic barriers. The students may have different levels of English proficiency to comprehend a linguistic aid. They could be typically challenged when they had difficulties to understand the linguistic teaching aids. Adopting visual aids can resolve this tension because the students had interacted with an aid irrelevant to language.

(i-i-ii) Non-threatening learning environment

In the overall approach to teaching, a non-threatening learning environment (see (i) My teaching in 3.3.4.3) was seen as being essential:

> Non-threatening atmosphere… helped the success in this class [i.e. creative writing]. (My teacher-researcher diary of stage two, April 22, 2005)

When the students had a sense of being threatened in their learning, negative psychological feedback was likely to be aroused. The negativity may have discouraged creative thinking:

> Negative thinking was a block for the creative writing. (My teacher-researcher diary of stage two, April 6, 2005)

A profound understanding of the importance of a non-threatening learning environment was unexpectedly discovered in this study. I accidentally misspelled the school name in the task of writing creative responses for the question:

> Why is the university closed tomorrow?

Instead of referring to the students' own university, my misspelling referred to another university, which most Taiwanese students longed to join. In order to maintain the students' motivation to learn in this lesson, I accepted their insistence on writing about this university:

> I surrendered to the students' zeal [to write about the above university] and let them write something they really wanted to [write]. (My teacher-researcher diary of stage three, November 21, 2005)

Afterwards, I realised that their motivation was negative:

> …their interest was actually negative…their ideas were mostly punishment-oriented. (My teacher-researcher diary of stage three, November 21, 2005)

Compared with the students' responses to other unexpected questions, the students' ideas were fewer and more negative in the above task. By observing such poorer performance of creative thinking, I reflected:

> …negative motivation decreased the creativity…limited their [the students'] creativity by fixing it into a target of attacking [the particular university]… (My teacher-researcher diary of stage three, November 21, 2005)

The above negative motivation violated the non-threatening learning environment. The students were threatening others outside the classroom scenario with their creative writing. It seemed that not only receiving threats, but also making threats would have caused tension and generated a negative influence in creative thinking. The demand for

a non-threatening learning environment was high in teaching creative language lessons (Sano, Takahashi and Yoneyama, 1984). In contrast, there was no discussion of non-threatening learning environments for analytical lessons in my teacher-researcher diary. It seems that teaching creative lessons was comparatively more demanding in this environment than teaching analytical lessons.

(i-i-iii) Interference of the students' native language

Creative writing in English was new for almost all of the students. A typical concern for Chinese students in this writing task was their English proficiency:

> The gap between thinking and language was quite predictable in creative writing… (My teacher-researcher diary of stage three, December 22, 2005)

In order to avoid interference from the students' native language in their production of creative writing in English, I made this suggestion:

> I encouraged them to try to write in English and it would not be necessary to use difficult words. (My teacher-researcher diary of stage three, December 22, 2005)

Most of the students followed this suggestion. However, a few students with lower English proficiency in essay-writing performed well in creative writing, but used Chinese. The following translation of a part of one of these students' creative writing:

> 死掉的雞叫鬼雞(軌跡)
>
> (軌跡)
>
> The dead chicken was called chicken ghost (trace).
> (Student work, Creative writing, Title: Trace, December 22, 2005).
>
> Note: The dead thing becomes a ghost, so a dead chicken becomes a chicken ghost. In Chinese, 'chicken ghost' and 'trace' are homophones. As 'trace' refers to something left behind,'chicken ghost' refers to the

> marks left after a life. This meaning can be personalised to apply to a human life.

The creativity with homophones in Mandarin proved that this student was thinking in the language of Chinese, rather than in English. The native language interference was demonstrated.

Another strategy to avoid the interference from the students' native language in this study was to clarify the instructional goal of this task:

> I pointed out [that] it [writing in Chinese] would not help their creativity in English writing. (My teacher-researcher diary of stage three, December 22, 2005)

In contrast, using Chinese during the students' essay process was not mentioned in my teacher-researcher diary. Some of the students may have a process of translating ideas from Chinese to English in essay-writing. However, producing English essays was an explicit goal in this course. The students were aware of their responsibility for achieving this goal. This awareness might have motivated the students to write in English, rather than in Chinese. Also, the process of translating ideas from Chinese to English might have overloaded the students' short-term memory (Friedlander, 1990) and taken additional time. The students might have preferred writing in English to avoid the additional memory operation and time consumption.

(i-ii) Sell Creative Ideas

This feature is suggested as:

> Students need to learn how to persuade other people of the value of their ideas. (Sternberg and Grigorenko, 2000, p.62)

Compared with guiding idea production, this feature was less formally facilitated. This feature might have been exercised in selecting the most creative ideas during the small group discussions and a poll from the entire class. Another scenario to facilitate this feature was in the added part of creative lesson—assessing creativity (see 3.3.4.3 Stage three). In these scenarios, I found three aspects worthy of consideration:

(i-ii-i) Non-threatening learning environment;
(i-ii-ii) Chinese cultural influence; and
(i-ii-iii) Division of generating ideas and selling creative ideas.

(i-ii-i) Non-threatening learning environment

As to facilitating idea production, this environment was important in facilitating the selling of creative ideas. During interaction between the students and in the entire class, this environment was carefully maintained in order to keep the idea exchange unblocked:

> In [the discussion of] assessing the students' creative writing, I did not compare [different creative ideas, which may have pressurized the students], but only pointed out the strengths and weaknesses…to let the students reflect on the creative writing of their peers. (My teacher-researcher diary of stage three, December 22, 2005)

> I encouraged the students to report [to the entire class]…without concern about being criticised by me or other classmates. (My teacher-researcher diary of stage three, November 21, 2005)

(i-ii-ii) Chinese cultural influence

In contrast to the native language inference in the feature of generating ideas, facilitating the feature of selling creative ideas involved the cultural, rather than the linguistic aspect. The influence of Chinese cultural characteristics in the 'Evaluate Solutions' feature (Sternberg and Grigorenko, 2000) reoccurred in assessing peer work in creative lessons. As in 'Evaluate Solutions' (Sternberg and Grigorenko, 2000), the students were reluctant to express their viewpoints (Littlewood, 1999):

> Chinese students…culturally,…maintain the harmony of a relationship, rather than…cause tension by analysing the strengths and weaknesses of creative writing. (My teacher-researcher diary of stage three, December 22, 2005)

The students' strategy for meeting my requirement to assess their peers' work was to

praise all their work:

> The students tended to appreciate all the ideas [from their peers]...without serious consideration, many students…claim these ideas were interesting and meaningful. A few students, who were more cautious in expressing their opinions, remained silent because of peer pressure. (My teacher-researcher diary of stage three, November 21, 2005)

The peer pressure within this collective classroom culture was differently defined from the westernised individualism. The peer from the viewpoint of these Chinese students was the entire class, rather than individuals in the class. The students tried to 'build on each other's responses' as 'collaboration as the group was the whole' (Kramsch and Sullivan, 1996, p.203). The individual competition from western culture (Coelho, 1992) was not shown in the above scenarios. However, the concern over competition among peers during creative writing was discovered in the individual interviews. A student identified his favourite classroom task as creative writing, but did not like part of it:

> T: Which part did you not like?
> S:…Because…others could think of so many [ideas]. Then, I just felt myself [only] thought of very few [ideas]. (A pause) Just felt very disturbed. (Post-intervention interview of stage three, Student A, January 5, 2006)

This suggested that the above harmony shown in a collective form might have a discrepancy when the scenario was changed into individual learning among Chinese students.

(i-ii-iii) Division of generating ideas and selling creative ideas

The necessity of dividing these two parts into different instructional units was reflected:

> …the students tended to…enjoy the fresh experiences and co-operation with their peers [in producing creative ideas] and…neglect…assessing these creative ideas. …It would be better to separate the ideas of producing and assessment [into different instruction units]. Since they

> required different features of creative intelligence… (My teacher-researcher diary of stage three, November 21, 2005)

The feature of selling creative ideas obviously involved evaluation in analytical thinking, although creative thinking can also be co-existent. In contrast, the feature of generating ideas seemed more irrelevant to analytical thinking. The different types of thinking involved between these two features may suggest that divided units of lessons are a better design. Otherwise, the students may feel confused by the complexity of learning these two features within the same lesson.

(ii) Inner-voice theatre (recategorisation)

This task was a follow-up activity to a reading lesson. This task was also an attempt to integrate the creative thinking that involved writing play scripts and acting into the analytical reading lesson. I analysed this tasks in depth in stage three by the framework of creative intelligence and practical intelligence (Sternberg and Grigorenko, 2000). The result was that nine features of practical intelligence and three features of creative intelligence were involved in this task. The nine features of practical intelligence follow:

Motivation:

> The students discussed, laughed and wrote the dialogues with excitement. They…more…engaged in the discussion within their own groups than before [i.e. analytical lesson]. (My teacher-researcher diary of stage three, October 24, 2005)

Control Impulses:

> While the students kept rehearsing, when it was time to take turns to act, I praised those groups which were willing to quit their excitement and rehearsing to be a quiet audience. (My teacher-researcher diary of stage three, October 24, 2005)

Persevere but Don’t Perseverate:

> The students did not write anything in the first couple of minutes, the teacher moved around…smiling and encouraged them to write anything that came to mind. (My teacher-researcher diary of stage three, October 24, 2005)

Use The Right Abilities:

> The students presented their talents in acting, writing and leading a group… (My teacher-researcher diary of stage three, October 24, 2005)

Action on a Plan:

> …the immediacy required by [accomplishing] the task can initiate the students rapid responses, high co-operation and get rid of negative thinking in learning, such as the fear of being criticised… (My teacher-researcher diary of stage three, October 24, 2005)

Orient to Product:

> The students rapidly finished the task and took turns to act it out… (My teacher-researcher diary of stage three, October 24, 2005)

Concentrate:

> …on the four walls of the classroom…fourteen groups post their dialogues…to practice their dialogues for acting out [rather than to worry about their ability to recite the dialogues]. (My teacher-researcher diary of stage three October 24, 2005)

Set Priorities:

> Some groups wished to keep on writing their dialogues when it was time to practice [orally]…I stopped their writing and asked them to practice the acting out and be ready for it. (My teacher-researcher diary of stage three, October 24, 2005)

Balance Thinking Skills:

> The students learnt to compare…After this analytical intelligence task, they participated in…inner-voice theatre…some creativity presented [in script writing and performing]… (My teacher-researcher diary of stage three, October 24, 2005)

The three features of creative intelligence follow:

Question and Analyse Assumptions:

> The teacher did not model the questioning assumption, but the students challenged their natural roles by this dramatised classroom task [which allowed them to be another person]. One male student imitated a female role as the mother… (My teacher-researcher diary of stage three, October 24, 2005)

Generate Ideas:

> …about thirty-eight students…It was perhaps better to smile just to encourage the students in their first experience of [creativity, after they had been instructed in reading the relevant passages]… (My teacher-researcher diary of stage three, October 24, 2005)

Build Self-efficiency:

> The teacher suggested [each of the] students taking turns to give ideas within the group… (My teacher-researcher diary of stage three, October 24, 2005)

Accordingly, this task involved both creative and practical intelligence in terms of providing an appropriate learning environment. More specifically, the facilitation of practical intelligence was based on requiring the students to accomplish a

multiple-layered task through teamwork. By accomplishing the task, the students demonstrated their ability to solve practical problems. These problems included communication between team members, allocating responsibilities, efficient use of time, space and materials (e.g. paper and pencil to write dialogues and available props). In contrast, the influence on the students' creative thinking from this task was limited to writing only short dialogues of a play script. The creativity in acting was also limited by the short span of time and the participation of only some, rather than all, of the students. Therefore, this task was weighted and categorised as a task of practical intelligence. This evaluation emancipated me from my perception of this dramatised activity:

> I was too quick to categorise this dramatised task as a creative intelligence task because of the students' creativity required in writing the dialogues. (My teacher-researcher diary of stage three, October 24, 2005)

My new understanding was that dramatised learning activities potentially required practical intelligence in order to cooperate with a certain number of people and to involve multiple-layer processes. Therefore, it was sensible to recategorise the task of inner-voice theatre into practical intelligence. However, the reality of the overlap between practical and creative intelligence within this task was also revealed.

Since this task involved practical intelligence, there is no further discussion of it because of irrelevancy to the research questions.

4.1.3 Comparison between creative and analytical teaching approaches

These comparisons between teaching creative and analytical thinking were made:

(i) A discrepancy was found in applying the analytical teaching approach and assessing creativity among Chinese students. The cultural influence on facilitating the assessment of creativity and evaluating analytical solutions seemed similar because both tasks involved making judgments on others' work. In contrast, the students' reluctance to give responses during the analytical lessons (see (i) Identify Problems in 4.1.1), did not reoccur in the creative lessons (see further discussion on 4.1.2 Motivation). This phenomenon seemed coherent with the

students' high motivation in creative lessons (see (i-i) High motivation in 4.2.1).

(ii) The teaching materials in analytical lessons were text-based, rather than using visual aids, which was important in the creative lessons.

(iii) The non-threatening learning environment was more important in teaching creative writing than essay-writing.

(iv) The interference from students' native language was more manifest in generating ideas for creative writing than in essay-writing. The possible reason was the students' awareness of writing essays in English in order to pass the course. They might not feel obligated to write creatively in English since their performance was irrelevant to their final marks.

4.1.4 Workload

The workload was tremendous for this research. The following factors produced this workload.

(i) Playing the dual role of teacher-researcher, I had the workload from both teaching and conducting research at the same time. A strategy of spreading the tasks of teaching and researching was applied to a certain degree. Most of my teacher-researcher diary was completed after the end of intervention. However, the research tasks (i.e. pre-testing, recording courses, writing notes for the courses and interviewing the students) were undertaken at the same period of time as the teaching tasks (i.e. preparation, teaching, marking assignments, holding midterm and end of term tests and consulting individual students). Particularly, it was impossible to undertake the pre-intervention interview before the first meeting with the students. The post-intervention interview needed to be conducted before the last lesson of this course; otherwise, the students would be reluctant to join the interview because it would take up their time after the university schedule. Within the above compact schedule, I was concerned about my energy levels during the research process:

> Having the dual role of teacher-researcher…the overloading from this

> role causes problems. (My teacher-researcher diary of stage three, January 6, 2006)

(ii) Teaching English reading and writing involved a heavy workload because of the nature of this subject:

> Teaching English reading and writing was more heavily loaded than [teaching] listening and speaking because it required revising the students' essays several times. (My teacher-researcher diary of stage three, November 10, 2005)

(iii) The class sizes of both creative and analytical groups were large (i.e. 35 students in the creative group and 42 students in the analytical group). I felt that it was difficult to teach two large groups in this research context:

> …to maintain a good quality of discussion...the number [of students] really mattered…both classes were too large… (My teacher-researcher diary of stage three, October 4, 2005)

(iv) As well as the workload accumulated from the above three factors, teaching the additional creative lessons in the creative group became a burden:

> Teaching creative intelligence within a subject [i.e. English reading and essay-writing in this study] increases the vast amount of workload. (My teacher-researcher diary of stage three, October 24, 2005)

Adopting an action research approach, selecting the subject and designing additional creative lessons were necessary for the research purpose. However, it was also necessary to prevent the teacher-researcher from burning out (Lau and Fellow, 2004-2005), risking the quality of teaching and researching.

4.1.5 Development design for action research

Considering the workload mentioned, there was a need for me to adjust during the research process. I found that the development plan for this study was important:

> Without these three stages of teaching, from [teaching] one group [in stage one] to two [groups] the first time [in stage two] to teaching two groups the second time [in stage three], my mastering of teaching will not be well cultivated. (My teacher-researcher diary of stage three, November 10, 2005)

The teaching capacity was better cultivated by a process of development. This, and the concern about workload (4.1.4), suggested that the development design was important in order to increase both teaching and research capacities in this study.

The suitable length of development for action research should be estimated in terms of accumulating different stages:

> Whether one semester course is sufficient for teaching subject contents, different types of intelligence and their balance is investigable. (My teacher-researcher diary of stage three, October 24, 2005)

Not only the length of one entire study, but also the appropriate lengths for different stages within this study were important. It might be particularly so for teaching these less experienced thinkers at their initiation stage to learn to meet the demanding intellectual challenges. The creative group was required to achieve two challenging leaning targets at the same time. The first challenge was to learn how to write essays in English. The second challenge was to exercise both analytical and creative thinking skills. In order to produce a smooth transition between these two targets, creative writing was taught two months after the lessons on essay-writing.

Furthermore, the development scheme could be altered to focus on one type of thinking over a period of time. The possible distraction from creative writing (see Attention and Conclusion in 4.2.2) could be therefore managed better than applying the strategy of gradual development in this study. An attempt was made to integrate creative writing in writing the third essay in which a new focus was to add an introduction and a conclusion. It was possible to establish a smoother transition from analytical to creative lessons after the students had learnt the above focus and covering all parts of writing an essay:

> …balancing the types of intelligence needs to take place in a later stage of the students' learning. (My teacher-researcher diary of stage three, October 24, 2005)

4.2 STUDENTS' RESPONSES

The analytical lessons of essay-writing were taught to both the analytical and creative groups. The lessons for creative writing and inner-voice theatre were only given to the creative group. After the inner-voice theatre task was recategorised from creative to practical intelligence, the remaining lessons of creative writing took only four periods (fifty minutes per period). Such an insufficient amount of intervention suggested that the following findings from comparing the creative and analytical teaching approaches could not provide the cause-effect explanation. The influence of these teaching approaches could only possibly to be one factor accounting for group differences. In contrast, the findings of the analytical lessons were substantial. The time spent on this part of the intervention was nineteen out of thirty-seven hours in the creative group (51%) and twenty-one and a half out of thirty-eight hours (57%) in the analytical group.

4.2.1 Motivation

The phenomena of motivation between receiving the creative lessons in the creative group and the analytical lessons in the analytical group were different.

(i) Creative group

The creative group demonstrated high motivation, increased motivation and problems in learning the creative lessons.

(i-i) High motivation

From my teacher-researcher diary from stage two to three, the students' motivation to learn during the creative writing lessons appeared recurrently high:

> They [i.e. the triarchic group] showed their excitement by enthusiastic discussion… (My teacher-researcher diary of stage two, April 22, 2005)

> …their [the creative group] attention is never a problem. (My

teacher-researcher diary of stage three, November 21, 2005)

This finding concurred with the following data from the post-intervention interview of stage three (see Tables 16 and 17).

Table 16: Favourite classroom task (creative group, stage three)

The favourite task	Number of students
Creative writing	7
Lesson on Going into Business	4
Group discussion	3
Acting	1
Debate	1
Total	16

Table 17: Less preferred classroom task (creative group, stage three)

The less preferred task	Number of students
No response	10
Inner-voice theatre	2
Creative writing	1
Comparison activities	1
Formulating a central idea of an essay	1
Making an outline	1
Total	16

Seven of the sixteen interviewees (44%) identified creative writing as their favourite classroom task. One of them identified creative writing as a less preferred task. However, the reason was the time limit of this lesson, rather than the task itself:

> After the time limit, there were many other things [i.e. ideas we had produced]… (Post-intervention interview of stage three, Student A, January 6, 2006)

The lessons of creative writing seemed to have a strong positive influence on student's motivation. This was similar to the students' responses in higher education in Britain (Everett, 2005), Scotland (McVey, 2008) and Hong Kong (Bolton and Lim, 2000).

The above positive influence was possible to involve a form of learning in groups:

> S: I just feel [that I] can synthesise ideas from all of us…the learning result was doubled…[in discussion group of creative writing]. (Post-intervention interview of stage two, Student B, June 10, 2005)

> S: There was a discussion in creative writing…everybody fervently discussed…Sometimes, discussion [in analytical lessons] was boring. Nobody had any opinions… (Post-intervention interview of stage three, Student C, January 5, 2006)

However, at stage two the students demonstrated their individual engagement in creative writing:

> …in individual creative writing…[I] encouraged them to have a short walk outside [of the classroom during the class time]…Only a few the students stood up and stretched their legs [and no one went out of the classroom]…This indicated that the students really worked hard on creative writing…they were interested in it…(My teacher-researcher diary of stage two, April 22, 2005)

Synthesising the above data from stage two and three, the students' engagement in creative writing seemed high regardless of whether the learning was in group or individual form.

In contrast to the negative influence from Chinese culture on the group discussions during analytical lessons (see (i) Identify Problems in 4.1.1), there are possible reasons for the above positive motivation during the group discussion of creative writing:

(i-i-i) Enjoyment of creative writing;
(i-i-ii) Cultural match; and
(i-i-iii) Other co-existent factors.

(i-i-i) Enjoyment of creative writing

The nature of thinking was fundamentally different in the group discussion between creative and analytical lessons. From post-intervention interviews in stage three, the

students reported that their enjoyment of creative writing was related to the nature of this thinking, for instance, 'relaxation' in creative thinking:

> S: Not so serious, quite easy-going… (Post-intervention interview of stage three, Student A, January 6, 2006)

> S: …no pressure… (Post-intervention interview of stage three, Student B, January 5, 2006)

Particularly, a few students provided their insights into creative thinking by comparing it with the nature of analytical thinking. An implicit example of this comparison was:

> S: I [i.e. my thinking] is not limited in a fixed structure [as I was in essay-writing]… (Post-intervention interview of stage three, Student C, January 6, 2006)

An explicit example of this comparison was:

> S: It was more relaxing…
> …
> S: …rather than doing your best to fit into the central idea [in essay-writing]…. I felt this process [of analytical thinking] was quite a hard task. Then, there was no such problem in creative writing. (Post-intervention interview of stage three, Student D, January 9, 2006)

Lessons for creative thinking seemed to have the potential to counter the deleterious influence of Chinese culture on the students' learning:

> …a student's uniqueness… [is] not a virtue but a voice to be suppressed. (Qing, 2008, p. 84)

(i-i-ii) Cultural match

Including both group and individual learning in the lessons of creative writing seemed to match both the Chinese and westernised cultures of the students. Under the trend of

globalisation, these Taiwanese students who inherited Chinese culture also grew up with westernised culture. The group work matched collectivism and the great distance from authority figure (e.g. teacher) in Chinese culture. The individual work matched individualism (i.e. tendency towards individual acts) in westernised culture. The transition from group to individual learning was smoothly developed in creative lessons (see (i) My teaching in 3.3.4.3). In contrast, there was no such development in the analytical lesson.

(i-i-iii) Co-existent factors

Co-existent factors should be considered in the above phenomenon of high motivation. The students' responses were perhaps influenced by the fresh experience of creative lessons, which were tremendously different from their former learning experiences. The freshness of this approach might enhance their motivation. In the post-intervention interview of stage three, a typical response from the students to creative writing was:

> S: …very interesting, just [having] no such experiences before.
> (Post-intervention interview of stage two, Student A, January 8, 2005)

Another possible co-existent factor was a change from analytical thinking to creative thinking. The analytical group might have experienced possible boredom arising from the nature of analytical thinking:

> S: Sometimes, discussion [in analytical lesson] was boring…
> (Post-intervention interview of stage three, Student B, January 9, 2006)

or only learning in one style—analytical teaching approach. In contrast, the change of types of thinking might have stimulated the motivation of the creative group.

(i-ii) Increased motivation

There was a phenomenon that the engagement of the creative group was increased from before to after the lessons of creative writing:

> …different from the past, most of them [i.e. the students] still sat and talked about the creative writing [during the break]… many students in

> the class [waited and] looked forwards to the next lesson [of creative writing] before the break time was ended. (My teacher-researcher diary of stage three, November 21, 2005)

However, the above phenomenon was followed up by a telephone interview three months after the intervention. In the telephone interview, the subsequent teacher described how the above group dynamic had disappeared:

> Only above median. (Telephone interview with the teacher instructing the next semester, April 2006)

Accordingly, the task of creative writing seemed to have the potential to increase the students' motivation and engagement in learning. However, the maintenance and the length of the increased motivation needed to be further investigated.

(i-iii) Problems in learning

Behind the scene of excitement in the above high motivation and increased motivation, the students also addressed their difficulties during the lessons of creative writing. Two difficulties were mentioned. One difficulty was the underlying peer competition (see (i-ii-ii) Chinese cultural influence in 4.1.2). The other difficulty was the pressure from the time limit of the creative lessons (see (i-i) High motivation in 4.2.1). A further difficulty was selecting just one from the many ideas produced. Some of the students reported:

> S:…While I selected one idea to write a story... [but] not knowing how to start. So, then, [I] selected another idea from them [to write]. Like this, it became time-consuming.
>
> …
>
> T: Did you spend a long time selecting the idea to write about?
>
> S: Yes.
>
> …
>
> S: …Because I had many ideas…if this one was not good, it was easy to give it up. Would not really think it through…It was negative. (Post-intervention interview of stage three, Student A, January 9, 2006)

These difficulties suggested that guidance in selecting ideas and resolving the concerns over time constraints and peer competition were needed.

(ii) Analytical group

The analytical group had different favourite (Table 18) and less preferred (Table 19) classroom tasks:

Table 18: Favourite classroom task (analytical group, stage three)

The favourite task	Number of students
Group discussion	14
Self-study	6
Presentation	1
Total	21

Table 19: Less preferred classroom task (analytical group, stage three)

The less preferred task	Number of students
No response	12
Self-study	5
Group discussion	1
Individual exercise	1
Question and answer	1
Reading passages with the entire class	1
Total	21

Creative writing was identified as the favourite classroom task in the creative group. In contrast, it seemed that the type of thinking was irrelevant to the students' perspectives on their favourite and less preferred classroom task in the analytical group. No responses from the analytical group identified any of three selected analytical features as their favourite classroom task, although most of them acknowledged the significance and their change in learning essay-writing (see 4.2.4 Perspectives on writing). The students' perspective on the time for self-study was that it was 'useful' (see 4.4.2 Level of pressure, learning attitudes and relevant disciplines, time management and self-study), rather than 'favourite' or 'less preferred' task.

Without being given creative lessons, fourteen of the twenty-one interviewees (67%) in the analytical group reported group discussion as their favourite classroom task. The

major reason was the enjoyment of sharing ideas, rather than the nature of analytical thinking:

> S: I felt [that] it was very interesting during the process of discussion because…different people had different opinions. Then, [we] would just exchange [ideas]. (Post-intervention interview of stage three, Student A, January 5, 2006)

> S: Because just listening to the opinions of my peers…I can have more ideas. (Post-intervention interview of stage three, Student B, January 7, 2006)

However, group discussion during the analytical lessons sometimes did not run well (see (i) Identify problems in 4.1.1). Rather than the influences of Chinese culture, other factors might have been involved in this lack of participation. One student reported that the lack of pre-study among the group members disabled them to participate during group discussions.

> S: But [if group members] did not pre-study…[there was] no use for discussion. (Post-intervention interview of stage three, Student C, January 9, 2006)

Also, noise control and enhancement of conflict resolution were suggested to improve participation in group discussion in another study of the Taiwanese context (Yeh, 2005). These factors might have decreased a student's motivation during the analytical lesson but comparatively less identified when the students recognised the enjoyment of sharing in group discussion.

Conclusion

The creative lessons seemed to have the advantages of:

- Interesting nature of creative thinking;
- Operating in cultural match;
- Freshness from the students' learning experience;
- A change from analytical thinking.

These advantages seemed to enhance the students' motivation in learning creative writing. In contrast, these were not these advantages in the lessons for analytical thinking.

4.2.2 Level of pressure, learning attitudes, disciplines, time management and self-study

In order to present the complexity of this discussion, it is divided into three parts:

(i) Level of pressure the students experienced;
(ii) Their learning attitudes and relevant disciplines;
(iii) The influence of time management and self-study:

(i) Level of pressure

The reasons for the students' learning pressure and for their changed learning pressure from stage two to three are discussed.

From stages one to three, the students reported that they experienced learning pressure and needed to adjust in this intervention:

(i-i) Stage one

There was only one group in stage one. Three pieces of advice given by this group to the next student group are as follows:

- The challenge of learning to write essays;
- Intensive intervention course; and
- Lack of time management.

Examples of raw data are as follows.

The challenge of learning to write essays:

> S: …[the students] need adjustment…when I first write the essay…very painful…often thought for the entire night and could not write one

sentence. (Post-intervention interview of stage one, Student A, January 6, 2005)

Intensive intervention course:

S: …the difference between this course and the courses [taught by other teachers] was [that] there was very much more instructional content. (Post-intervention interview of stage one, Student B, January 5, 2005)

Lack of time management:

S: …[I] wasted too much time on unimportant things…[I] had a great pressure…[I was] gradually adjusted… (Post-intervention interview of stage one, Student C, January 5, 2005)

(i-ii) Stage two

There were two groups in this stage. The same reasons for the pressure in stage one reoccurred in student reflection papers of stage two from both groups. The relevant raw data indicating either of analytical and creative groups are as follows:

The challenge of learning to write essays:

…[writing] essays was even more difficult than…homework [in other subjects]. (Student reflection paper of stage two, Student D, Triarchic group, June 10, 2005)

…how to show my thoughts…and arguments in details [for my essays] seems a big task for me…(Student reflection paper of stage two, Student E, Analytical group, June 8, 2005)

Intensive intervention course:

The Freshman English is also very fast compared with the other courses…under pressure of this kind [of intensive] teaching… (Student reflection paper of stage two, Student F, Triarchic group, June 10, 2005)

> The reading and writing class is really intense…(Student reflection paper of stage two, Student G, Analytical group, June 8, 2005)

Lack of time management:

> …many things came unceasingly and occupied much time of mine, I began to concentrate less in the English class. (Student reflection paper of stage two, Student H, Triarchic group, June 10, 2005)

> I always did my homework at the last minute. So I felt huge pressure in class. (Student reflection paper of stage two, Student I, Analytical group, June 8, 2005)

(i-iii) Stage three

As in stages two and one, the same three reasons for pressure reoccurred in both groups of stage three. Examples of raw data from the post-intervention interview from each of the creative and analytical groups are as follows:

The challenge of learning to write essays:

> S: Rather hard work.
> …
> S: These are what I did not learn in the past…(Post-intervention interview of stage three, Student J, Creative group, January 6, 2006).

> S:…my first time [of writing an essay]…was not clear. Then, just, seemed write [something] wrong [i.e. not following writing structure], [I] was shocked…(Post-intervention interview of stage three, Student K, Analytical group, January 7, 2006).

Intervention course:

> S: …Just learnt a lot of things (a pause) actually it [i.e. this course] was quite solid. (Post-intervention interview of stage three, Student L,

Creative group, January 5, 2006)

S: …a greater pressure.

…

S: The amount of vocabulary and reading contents become more… (Post-intervention interview of stage three, Student M, Analytical group, January 5, 2006)

Lack of time management:

T: Then, do you have time to study English after class?

S: (A pause) No. (Post-intervention interview of stage three, Student N, Creative group, January 6, 2006)

S: Study for a while…[I was] distracted…

….

S: [I] probably surf the internet for a while and come back to study.

…

S:…[it] seemed [that] time is just wasted. (Post-intervention interview of stage three, Student O, Analytical group, January 7, 2006)

Furthermore, the students' responses indicated that levels of pressure were changed from stage two to three. In stage two, ten of the fifteen interviewees (67%) in the triarchic group (Table 20) and nine of the seventeen interviewees (53%) in the analytical group (Table 21) reported their concern over learning pressure.

Table 20: Learning pressure (triarchic group, stage two)

Responses	Number of students	Percentage
Positive	10	67%
None	5	33%
Total	15	100%

Table 21: Learning pressure (analytical group, stage two)

Responses	Number of students	Percentage
Positive	9	53%
None	8	47%
Total	17	100%

On average, 60% of interviewees from both groups reported this concern.

In stage three, seven of the sixteen interviewees (44%) in the creative group (Table 22) and three of the twenty-one interviewees (14%) in the analytical group (Table 23) reported their concern about learning pressure.

Table 22: Learning pressure (analytical group, stage three)

Responses	Number of students	Percentage
Positive	7	44%
None	9	56%
Total	16	100%

Table 23: Most useful content learnt (creative group, stage three)

Responses	Number of students	Percentage
Positive	3	14%
None	18	86%
Total	21	100%

On average, 29% of interviewees from both groups reported this concern.

The above decreased number of students concerned about learning pressure from stage two (60%) to three (29%) suggested that the students experienced less pressure in stage three.

Among the above three possible reasons, lack of time management was unlikely to cause this change. The relevant information given was similar in stages two and three. The level of intellectual demands was also similar in stage two and three. The students were required to demonstrate their competence in writing essays which presented the central idea and basic writing structure in both stages.

However, the students were required to write four essays at stage two and three essays

at stage three. The intervention was less intensive because of this deduction. The students' learning pressure might therefore have been decreased because of the less intensive intervention. Their adjustment to learning in essay-writing might therefore have become easier.

Another possible reason for this pressure reduction is that the quality of my teaching was proved to have increased from stage two to three (see (i) My pedagogic changes in 3.4.7.7 Synthesis across stages).

The group difference in experiencing learning pressure was also compared. The difference between the creative group and the analytical group was greater in stage three (44% versus 14%) than that between the triarchic group and the analytical group in stage two (67% versus 53%). Therefore, the comparison focused on stage three.

The above statistics showed that the analytical group seemed to experience less learning pressure than the creative group in this stage. The following data from my teacher-researcher diary indicates that one possible reason for the above group difference was intellectual demand:

> …compared with the analytical group, the creative group met a more complicated learning situation from the diversity of [analytical and creative] tasks. (My teacher-researcher diary of stage three, December 1, 2005)

(ii) Learning attitudes and relevant disciplines

The analysis of learning attitudes and relevant disciplines was complicated because it involved behaviour after class (e.g. doing textbook exercises, writing essays, pre-studying and revising for tests). However, these fundamentally affected the students' learning and their responses to my teaching. The relevant discussion is vital in order to depict a bigger picture of the students' learning. The complexity mentioned also suggested that the factors were potentially different between stages two and three (e.g. different individual learning attitudes). Therefore, this discussion focuses only on stage three.

The discussion of the following aspects is based on my teacher-researcher diary. The

student perspective from both interviewing and their reflection papers did not address this area.

- Attending the course;
- Attention;
- Doing homework; and
- Academic performance.

Attending the course

At the beginning of this course, the students were late for the lesson in both analytical and creative groups and this was a problem for my teaching:

> …the students who were late were about half in the creative group and one third in the analytical group. (My teacher-researcher diary of stage three, October 6, 2005)

During the intervention, the different reasons for late attendance in the two groups were discovered:

> The creative group was late because of poor time management…there were no other classes before this Freshmen English course…the analytical group was late because their class [before the intervention course] was dismissed late…also [the classroom of their previous lesson was] far away from this English classroom. (My teacher-researcher diary of stage three, October 13, 2005)

Furthermore, in terms of attending the course, the analytical group improved during the intervention. In contrast, absence in the creative group was still a problem in the few weeks before the end of the course:

> It seemed that all the students in the analytical group came to the class [on time] as usual. However, there were some absentees in the creative group [near the end of the semester]. (My teacher-researcher diary of stage three, December 13, 2005)

Attention

In contrast to high concentration particularly during the lessons of creative writing, the overall concentration in the creative group was less than that in the analytical group. One possible factor was the distraction caused by the new creative teaching approach:

> …the intervention curriculum...It allowed the students [in the creative group] to have [new and] diverse experiences [from analytical and creative tasks]...classroom management was harder in the creative group [than in the analytical group]. (My teacher-researcher diary of stage three, January 5, 2006)

The problem of classroom management in the creative group appeared unresolved approximately three weeks before the end of this study:

> …there was still a problem with classroom management [at the end of the course]…in the creative group… (My teacher-researcher diary of stage three, December 13, 2005)

Doing homework

The students' learning in how to write essays in English relied heavily on their practicing after lessons. As with lateness, reluctance to do homework was a problem for both groups at the beginning of this course:

> …the students not doing homework…[It] was about three fourths and two thirds in the creative and analytical groups respectively… (My teacher-researcher diary of stage three, October 6, 2005)

However, the analytical group changed during the intervention and the creative group did not:

> According to the marks on the textbook [which was easy to accomplish, if attending the class], the number of students getting a high mark…in the analytical group, was twice that of [those] in the creative group… (My teacher-researcher diary of stage three, November 8, 2005)

Near the end of semester, handing in homework was still a problem in the creative group:

> I felt the students' haste [in the creative group] on handing in the essay. [One of them] handed in his essay without indicating a name… some students handed in their essays without checking spellings on their own computer and being one week late without consulting the teacher. [There were no such occurrences in the analytical group]. (My teacher-researcher diary of stage three, December 5, 2005)

Another factor of this problem was time management:

> …although the creative group could freely use their time to do homework after class [which was a normal expectation], their poor performance [during the lesson] gave evidence that they lacked disciplines in finishing the homework or time management. (My teacher-researcher diary of stage three, November 8, 2005)

Academic performance

The analytical group outperformed the creative group in essay-writing and the university version of the final test. The average score of the three essays in the analytical group (77.4, the highest mark on this scale was 100) was greater than that of the creative group (65.2).

The English proficiency in the creative group was higher than that in the analytical group (t (67) =-3.52, p<.001, see 3.2.2 Participant groups). After the intervention, in F-test (independent variable: curriculum, dependent variable: post-test (university version of the traditional final test) and covariate variable: the university language placement test before intervention), the analytical group outperformed the creative group ($F= (1, 66) =3.43$, p=.034 (one tailed), $m1=69.34$, $m2=65.97$, $n1$=38, n2=31).

The above group difference in academic performance might confirm the better learning attitudes and relevant disciplines of those in the analytical group than those in the creative group. It seemed reasonable to require the students to have an adequate learning attitudes and relevant disciplines in order to achieve:

- Successive competence in writing three essays; and
- The score in the final test in which the test content covered five chapters of the textbook.

The above differences the between two groups might involve factors not being detected by this study. Furthermore, the above analysis also involved a discrepancy between diary entries. However, a picture of the students' learning attitudes and relevant disciplines might be approximated with six entries altogether from October 2005 to January 2006:

- October 6, 2005;
- October13, 2005;
- November 8, 2005;
- December 5, 2005;
- December 13, 2005; and
- January 5, 2006.

The influence of lack of time management was mentioned in the above discussion and further discussed in the next section. The influence of teaching approaches is discussed in the conclusion.

(v) Time management and time for self-study

This discussion is based on the raw data from the following sources:

- The five most important things (the post-intervention interviews);
- Whether there was any significant change (the post-intervention interviews); and
- Time for self-study (survey).

Firstly, the influence of time management was manifest by giving time for self-study only to the analytical group in stage three. When asked to list the five most important things during the intervention, learning essay-writing was the most important. Seven out of sixteen interviewees (44%) in the creative group and thirteen out of twenty-one interviewees (62%) in the analytical group identified this. The numbers of students that

identified the other areas as the most important things were comparatively small.

However, including both the first and second most important things, the categories other than learning essay-writing are shown. The first three frequencies from high to low of this count in the creative group were:

- Learning essay-writing;
- Time management; and
- Group discussion.

In the analytical group, the first three frequencies from high to low of this count were:

- Learning essay-writing;
- Time management; and
- Learning reading.

Five out of the thirty-two[20] (16%) interviewees in the creative group and four out of the forty-two (10%) interviewees in the analytical group reported the importance of time management. These percentages were small. However, other than learning essay-writing, the importance of time management was the only area identified by both groups.

Secondly, when asked whether or not there was any significant change during the intervention, six of the sixteen interviewees (38%) in the creative group and five of the twenty-one interviewees (24%) in the analytical group reported their change in time management. Accordingly, time management was important for both groups.

Thirdly, in self-study surveys, the students perceived the time for self-study as being useful. Only the analytical group was given time for self-study. Twenty-five out of the forty-two students (60%) in the first survey, twenty-nine of these students (69%) in the second survey, and twenty-six of these students (62%) in the third survey acknowledged the usefulness of time for self-study. The students also reported the reason for this perspective. One common reason was the efficiency of learning targets:

[20] Combining the first and second ranks in the above task, the total number of students was doubled in order to calculate the percentage. This is 32 student accounts in the creative group and 42 student accounts in the analytical group.

> Yes [i.e. useful], because of high efficiency and making a lot of progress. (Reflection on self-study of stage three, Student A, December 27, 2005)

The reasons for the above efficiency were 'no distraction' and class atmosphere:

> Useful. Because firstly, there was no distraction in the classroom [and] secondly, the environment, everybody was studying. (Reflection on self-study of stage three, Student B, December 27, 2005)

Distraction from studying in the dormitory was reported:

> Useful. Staying in the dormitory, [I] either slept or played computer games. (Reflection on self-study of stage three, Student C, December 20, 2005)

Some students further identified the compensation for poor time management during the time for self-study:

> Useful, because [it was] rare for me to have time to study English [after class]. (Reflection on self-study of stage three, Student D, December 20, 2005)

The importance of time-management to students' learning was also written in my teacher-researcher diary:

> …the amount of self-study time would release a lot pressure from poor time management... (My teacher-researcher diary of stage three, December 15, 2005)

Conclusion

Time management was one of the common factors of learning pressure in both groups. In the nationwide survey of freshmen's needs in 2005 (Ye, 2006), 47% of freshmen spent one hour doing homework every day. In contrast, 51% of them spent three hours surfing the internet every day. More specifically, male students spent 29.33 hours per week (SD=25.12) on the internet. Only 2.77 of 29.33 hours were relevant to academic

work. Female students spent 25.8 hours per week (SD=21.16) on the internet. Only 3.65 of 25.8 hours were relevant to academic work. Accordingly, the engagement of academic work among Taiwanese freshmen was rather low. The lifestyle of the students in Taiwanese higher education was described as being hotel-like (Qiu, 2006).

With such insufficient engagement, the students' inability to fulfill the intellectual demands in higher education was a concern (Qiu, 2006). It seemed that the lack of time management among the students in this study was similar to many Taiwanese freshmen. Pressure from insufficient engagement in meeting the intellectual challenge seemed to have occurred in this study (see the analysis of adjustment in conclusion of 4.2.4).

The influence of teaching approaches in the level of pressure, different learning attitudes and relevant disciplines was written in my teacher-researcher diary, rather than from the students' responses. It was common for the students to focus on the excitement of creative lessons and ignore the learning pressure and distraction from these lessons.

By having self-study time, the analytical group had an advantage over the creative group in having more time on targeted learning. This advantage might have influenced the analytic group having less learning pressure and better learning attitudes, disciplines and academic performance, including the language test, than the creative group. In contrast, without the above advantage, the creative group might have experienced greater difficulty in facing the intellectual challenge of essay-writing and additional learning for creative writing, with a possible distraction from the novel, creative teaching approach.

4.2.3 Achievement

This section discusses the students' achievement in creative writing and essay-writing:

(i) Creative writing

In stage three, the students generated many creative ideas and each of them wrote five to seven poems or creative stories during the lessons. Twenty-seven out of the thirty-five students (77%) in the creative group demonstrated their individual creative writing mostly in the form of English poems. When asked to select a picture to represent the theme of a reading, the students reported that their reading comprehension was

enhanced:

> S: …that story seemed to become much more vivid and reached out many things. (Post-intervention interview of stage three, Student A, January 5, 2006)

> I expressed my satisfaction with the students' presenting their ability to dig for the deeper meanings and feelings underlying the reading text. (My teacher-researcher diary of stage three, October 24, 2005)

The above was one example of the integration of reading and writing through creative writing (Campbell, 1998). However, in terms of integrating creative writing into essay-writing, I expected that:

> …the students may apply…generating more ideas or thinking more freely during the essay-writing process. (My teacher-researcher diary of stage three, December 29, 2005)

However, this was not a common practice among the students. Only one student recalled how she applied the thinking skills learnt from creative writing:

> S: …I could not figure out what to think…Later on…reminding of describing a picture in the mind in creative writing...and then, gradually sorted out how to write. (Post-intervention interview of stage three, Student B, January 6, 2006)

The above weakness in integrating creative thinking with essay-writing was also reflected in my teacher-researcher diary:

> … [in] creative writing…to integrate it with essay-writing…is more advanced and needs further curriculum design. (My teacher-researcher diary of stage three, November 21, 2005)

The discrepancy between improving creative thinking and English proficiency (i.e. essay-writing in this study) was also found among Taiwanese junior high students (Su,

2007).

(ii) Essay-writing

Thirty out of the thirty-five students (86%) in the creative group and thirty-nine out of the forty-two students (93%) in the analytical group completed three essays. This suggested that most of the students demonstrated their competence in English essay-writing by successively achieving the baseline—presenting a central idea and the basic writing structure. These performances also indicated the students' ability to participate in dialogues of inquiry in the classroom and to solve problems during the individual writing process. The problems in the students' individual processes were not substantially explored in this study. However, it would have been unlikely to achieve the above level of essay-writing without exercising the feature of 'Identify Problems' (Sternberg and Grigorenko, 2000).

In facilitating 'Represent and Organise Information' (Sternberg and Grigorenko, 2000), understanding the concept of different writing structures between Chinese and English essays did not guarantee the students' application of this understanding. The interference from the Chinese writing structure in writing English essays remained unsolved to a certain degree:

> Some students…were confused by the common stylistic logic [instruction] in writing a Chinese essay: Chi, Cheng, Chuang, He (起承轉合, i.e. to begin, to continue, to make a turn and to make a synthesis or conclusion)… (My teacher-researcher diary of stage three, November 7, 2005)

In facilitating 'Evaluate Solutions' (Sternberg and Grigorenko, 2000), most students repeated the same mistakes/weakness in their self-evaluations. They were also less interested in self-evaluating their second or third essays. Unlike the self-evaluation of the first essay, more blanks were found in those of the second and third essays. The students might not see the importance of the self-evaluation unless the relationship between this self-evaluation and achieving success was explicit. This suggested a need for further guidance to the students for self-evaluation (Chen, 2008).

Conclusion

A discrepancy was found in integrating both creative thinking and analytical thinking into essay-writing. However, the students' learning in essay-writing was more substantial in terms of successive performances and achieving the baselines than that in creative writing.

4.2.4 Perspectives on English writing

After experiencing creative writing and essay-writing in English, the students conveyed their perspectives on these two types of learning activities:

(i) Creative writing

This section discusses the students' perspective on creative writing. These perspectives might shed light on the reasons for their high and increased motivation during the lessons and their identifying creative writing as their favourite classroom task. The creative writing in stages two and three was mostly the same. Only creativity assessment, which took approximately twenty minutes, was added at stage three. It was unlikely that the students' perspective on creative writing would be different because of this minor change. Their perspectives on creative writing from the post-intervention interview at stage two and stage three were compatible. Therefore, the following discussion synthesised the data from stages two and three.

In earlier discussion, their two perspectives on creative writing were introduced:

- Brand new experience; and
- Enjoyable learning activities (see (i-i) High motivation in 4.2.1).

Their other perspectives on creative writing are as follows:

(i) Rediscovery of interest in learning English;
(ii) Expressing thinking;
(iii) Discovery of potential;
(iv) Confidence establishment; and
(v) Less intellectual engagement.

(i) Rediscovery of interest

Another value of creative writing from the students' perspective was to renew their interest in learning English:

> …dislike English less…more and more desirable to learn English… (Post-intervention interview of stage two, Student A, June 9, 2005)

(ii) Expressing thinking

One possible reason for this lack of desire to learn English might be the lack of 'thinking education' in the students' previous experiences of rote learning:

> …express my own ideas in [the creative writing of]…this is what I lacked in the past… (Post-intervention interview of stage two, Student A, June 10, 2005)

(iii) Discovery of potential

A further perspective was explored by the fact that some students were encouraged because their potential was explored in producing ideas:

> S: …needed to have as many ideas in a very short time, this, also could breakthrough my own potential. Right! (Post-intervention interview of stage three, Student A, January 6, 2006)

and in writing poems in English:

> S: Just…being able to write the poems!…If I could think [how to rhyme the poems in English] by myself, it would be very interesting… (Post-intervention interview of stage three, Student B, January 6, 2006)

> S: Like writing poems …just like learning some [unique] skills... (Post-intervention interview of stage three, Student C, January 5, 2006)

The above descriptions showed that the experience of writing poems in English was important to the students. These experiences explored the students' new potential of

being able to write poems (i.e. a higher level of writing in a common understanding) in English, which was beyond the expectations among foreign language learners.

Specifically, 'imagination' was well acknowledged among the students as a mental ability to be developed in creative writing:

> …gave me some space to develop my imagination. [Creative] writing should be unique and attractive. (Student reflection paper of stage two, Student D, June 10, 2005)

(iv) Confidence establishment

These experiences of developing the students' potentials established their new and positive perspectives on their ability in learning English writing. As a result, their confidence in creative writing was demonstrated:

> I had the students raise their hands to identify their ability in creative writing. Most of them raised their hands…very few of them identified this when I asked them at the beginning of this lesson. (My teacher-researcher diary of stage three, November 21, 2005)

Furthermore, I observed the positive influence of creative writing on some students with low English proficiency in terms of establishing a sense of accomplishment:

> [The students with] low English proficiency and passive responses in the classroom tasks were motivated…in creative writing. (My teacher-researcher diary of stage three, December 22, 2005)

It is expected that the development in writing English poems would be limited by the students' English proficiency. However, the positive experiences in creative writing led these students to reassess their potential and current proficiency in English writing.

(v) Less intellectual engagement

In contrast to the above positive perspectives on creative thinking, the following descriptions were in a negative aspect—less intellectual engagement:

> S: …no need to search for information with…effort [in creative writing as that in essay writing]… (Post-intervention interview of stage three, Student A, January 6, 2006)
>
> S: …[if] you digress from the central idea, you would think a way to modify…to fit into the central idea. I felt that process is rather effort-consuming. Creative writing has no such problem. (Post-intervention interview of stage three, Student B, January 6, 2006)

The above data indicated the disinclination of intellectual engagement in creative thinking although the students perceive it positively. The above data also indicated the same disinclination in analytical thinking. The students explored their negative perspective on analytical thinking by describing it with 'effort consuming', rather than 'effort-making'.

Except for the less intellectual engagement, the above positive perspectives may reinforce each other.

The above perspectives emerged in this research context in which the amount of intervention was insufficient. With sufficient intervention, more meanings and more recurring ones might have been found. A more holistic picture of creative writing among Chinese learners could be better drawn.

(ii) Essay-writing

Both groups learnt English essay-writing. During the post-intervention interview of stage three, the following perspectives on essay-writing were derived when the students were asked about:

- The five most important things;
- Whether there was any significant change; and
- The most useful content learnt during the intervention.

According to the raw data from these three interview questions, the following two phenomena were found in the students' perspectives:

- Significance of essay-writing; and
- Changed perspective on essay-writing.

(ii-i) Significance of essay-writing

In this section, the statistics and the relevant examples of both the analytical and creative groups were presented in order to demonstrate similar influences between these two groups.

As described, in the task of listing the five most important things of the intervention, learning essay-writing was the most important in both groups. Seven out of sixteen interviewees (44%) in the creative group and thirteen out of twenty-one interviewees (62%) in the analytical group acknowledged this. The number of students identifying the other areas was comparatively small.

Secondly, when asked about any significant change during the intervention, learning to write essays was identified as the most significant change in both groups. Twelve of the sixteen interviewees (75%) from the creative group and sixteen of the twenty-one interviewees (76%) from the analytical group reported their improvement in essay-writing.

Also, improvement in reading was the second most significant change in both groups. Eight of the sixteen interviewees (50%) from the creative group and twelve of the twenty-one interviewees (57%) from the analytical group reported changes in reading. However, with further analysis, most of the changes were:

> From reading from the beginning to the end of the text into scanning the writing structure (i.e. identifying the central idea and topic sentences).

Examples of raw data are as follows:

> S: Reading essays with a higher efficiency. Just after understanding the structure of an essay, then you know …which part to read [of the reading text]. [I] can mostly directly understand the ideas expressed [from the essay]. (Post-intervention interview of stage three, Student A,

Analytical group, January 5, 2006)

S: Like reading an essay, in the past, just read through [from the first to the last word]…did not think…what the key points, where the topic sentences were. [But] now [when] I read, [I] will.

…

S: …[Reading] became easier.

…

S: …[Reading] was rather interesting. (Post-intervention interview of stage three, Student B, Creative group, January 6, 2006)

This change was actually influenced by acknowledging of the writing structure acquired in essay-writing lessons.

Thirdly, the following responses were given by both groups when asked which was the most useful content in the intervention, twelve of the sixteen interviewees (75%) from the creative group and twelve of the twenty-one interviewees (57%) from the analytical group identified the essay-writing lessons as the most useful content.

The numbers of students identifying other areas as the most useful were comparatively small in the creative group (Table 24) and analytical groups (Table 25).

Table 24: Most useful content learnt (creative group, stage three)

The most useful content learnt	Number of students
Writing essays	12
Reading skills	3
Lesson on Going into Business	1
Total	16

Table 25: Most useful content learnt (analytical group, stage three)

The most useful content learnt	Number of students
Writing essays	12
Reading contents	3
Reading skills	2
Time management	2
No responses	2
Total	21

According to the data from the above three interview questions, learning essay-writing proved to be significant to the students in both groups.

(ii-ii) Changed perspective on essay-writing

In both tasks of listing the five most important things and identifying the significant change during the intervention, the students' responses indicated a finding:

> Their perception of essay-writing had changed during the intervention.

The students described the change as a comparison between their writing experiences between the secondary English education and in this study. During this study, the lessons of essay-writing at stage two and three were mostly the same. In order to show the similarity in both groups across stages, the example of both the groups in stages two and three are presented. The examples in stage two are from the student reflection papers; the examples in stage three are from post-intervention interviews:

> I learnt…preparing to write, collecting data, composing a draft, revising and refining the draft, editing and proofreading, and finally a perfect composition finished…all the[se] writing skills that I didn't know how to use before [i.e. in secondary English education]. (Student reflection paper of stage two, Student A, Triarchic group, June 10, 2005)

> I had written many essays when I was a senior high school student, but we did not have any course…about writing skills. Through [this course] …I came to realise how to construct an essay including introduction, body and conclusion. (Student reflection paper of stage two, Student B, Analytical group, June 8, 2005)

> S: …very different…
> …
> S: [in] high school…[you] just write two paragraphs…writing was not that deep.
> ….
> S: Now…the entire [essay] with a structure. Right! (Post-intervention

interview of stage three, Student C, Creative group, January 6, 2006)

S: …in the senior high school…the teacher…probably gave you a picture to write with it. Such a thing needed no preparation… Composition was quite spontaneous…not solid. Coming here [i.e. this intervention] …you write an essay for argument…needed to read the textbook…then listed things one after another, then wrote down an essay…it was a big difference…(Post-intervention interview of stage three, Student D, Analytical group, January 7, 2006)

With this changed perception of essay-writing, the following perspectives on essay-writing emerged:

(ii-ii-i) Expressing thinking;
(ii-ii-ii) Confidence establishment;
(ii-ii-iii) Enjoyment of accomplishment;

(ii-ii-i) Expressing thinking

Based on the new writing experience in this study, the students redefined the purpose of essay-writing:

...the time I spent on writing ideas is very worthwhile. (Student reflection paper of stage two, Student A, Triarchic group, June 10, 2005)

…before we write a composition, we must make a logical writing structure. (Student reflection paper of stage two, Student B, Analytical group, June 8, 2005)

S: …writing is…(a pause) not only for testing. It has its own purpose.
…
S:…[the purpose is] expressing one's own ideas…(Post-intervention interview of stage three, Student C, Analytical group, January 5, 2006).

S: It became writing for meanings. (Post-intervention interview of stage

three, Student D, Creative group, January 9, 2006)

Furthermore, a student in stage three expressed her justification for attending an English course in providing thinking education:

> S: …something like vocabulary and grammar…You need to absorb in your own time. Attending a course to absorb [vocabulary and grammar], it seemed meaningless…Just feeling that attending a course was to learn something you could not learn by yourself [i.e. thinking education]. (Post-intervention interview of stage three, Student E, January 5, 2006)

It seemed that emphasising 'thinking education' in teaching English essay-writing cultivated a value of formal writing:

> S: … a decent essay should be written like this [i.e. presenting logical ideas]. In the past, that kind [of writing] was just our own personal way of writing. (Post-intervention interview of stage three, Student F, January 7, 2006)

(ii-ii-ii) Confidence establishment

Some students described the negative learning experiences of essay-writing in their secondary English education and identified the positive perspective on learning essay-writing in the present study:

> I have become … more confident towards … writing [essays in English]. (Student reflection paper of stage two, Student A, Triarchic group, June 10, 2005)

> I have more confidence in my writing and I am not afraid of English writing any more. (Student reflection paper of stage two, Student B, Analytical group, June 8, 2005)

> S:…towards my own writing [ability], [I] became more confident. (Post-intervention interview of stage three, Student C, Creative group,

January 6, 2006)

S:…no more fear [of writing] (Post-intervention interview of stage three, Student D, Analytical group, January 7, 2006)

(ii-ii-iii) Enjoyment of accomplishment

The source of their enjoyment in writing English essays seemed to be the sense of achievement:

I am so happy that I can learn so many composition techniques in this course… (Student reflection paper of stage two, Student A, Triarchic group, June 10, 2005)

This course will be a fantastic memory in my life journey…My writing skills are better than ever and I appreciate it. (Student reflection paper of stage two, Student B, Analytical group, June 8, 2005)

S:…But after you finished, you read it by yourself…you would have a feeling of concrete. (Post-intervention interview of stage three, Student C, Analytical group, January 5, 2006)

S: It [i.e. essay-writing] was full of challenges...Overcoming difficulty will give you a sense of accomplishment. (Post-intervention interview of stage three, Student D, Creative group, January 5, 2006)

However, a student admitted his disinclination towards the above intellectual development:

S: I felt very troublesome because I have to use my brain… (Post-intervention interview of stage three, Student E, January 7, 2006)

This disinclination could be a side-effect of coping with national testing in the students' secondary English education. It is coherent to the above analysis across three stages in

the challenge of learning to write essays (see (i) Level of pressure in 4.2.2).

Furthermore, the trend in the students' motivation changed from low to high during the process of completing an essay:

> S: Actually, did not enjoy it…Because [of the] need to keep thinking [i.e. intellectually demanding]…
>
> …
>
> S: Oh! Just after finishing writing an essay, [I] would have a sense of accomplishment. (Post-intervention interview of stage three, Student F, Creative group, January 5, 2006)

> T: How do you feel after you complete an essay?
>
> S: Released from a heavy burden?
>
> …
>
> S:…a kind of sense of accomplishment. (Post-intervention interview of stage three, Student G, Analytical group, January 9, 2006)

An increase in motivation by accomplishment was also found in higher education in China (Hu, 2008). The assurance of competence in English was comparatively significant in continuing learning English among foreign language learners than native-English speakers, who experienced their competence in English in daily life.

Conclusion

The above discussion explicitly focuses on the students' experience during the lessons to facilitate creative and analytical thinking. However, other factors during the operation of teaching in these two approaches, rather than only the nature of creative and analytical thinking, might have influenced the students' learning experiences. Also, the intervention was insufficient in this study. The following comparison is only part of the story.

Both creative and analytical teaching approaches seemed to establish a positive perceptive towards English writing among the students. Expressing thinking and establishing confidence were the two common themes of the students' perspectives in these two approaches.

The above discussion on changed perspectives on essay-writing indicated the influence of coping with national testing in secondary English education. The disinclination to develop intellectually in above essay-writing seemed coherent to the similar phenomenon in creative writing (see (i-i-i) Enjoyment of creative writing in 4.2.1) and essay-writing (see (v) Less intellectual engagement in 4.2.4). This phenomenon also seemed to suggest a need for the students to adjust to intellectual demands in higher education. According to the above positive perspectives on learning essay-writing and creative writing and the students' achievements in these two areas (see 4.2.3 Achievement), both groups seemed to have adjusted to the learning pressure to a manageable degree. The successful learning experiences in both creative and analytical teaching approaches also seemed obtained by the students.

The other perspectives between these two teaching approaches seemed different in nature. The perspectives on the analytical teaching approach appeared more practical in terms of academic achievement. Those from the creative teaching approach could be in more personal development. For instance, the enjoyment of essay-writing seemed more substantial from the sense of achievement and after completing essays. In contrast, the enjoyment of creative writing seemed more contemporary and during the process of writing (sees Conclusion in 4.2.1).

4.2.5 Perspectives on successfully learning English in Taiwan

How to learn English as a foreign language successfully in Taiwan was investigated in stage three. By comparing the students' perspectives before and after the intervention, the influence of the analytical and creative teaching approaches on this area were synthesised in the following aspects:

(i) The most important factor;
(ii) Methods; and
(iii) Intellectual aspect.

(i) The most important factor

The students' perspectives changed from 'language environment' to 'effort' as the most important factor for successfully learning English in Taiwan in both groups.

Before the intervention, twelve of the sixteen interviewees (75%) in the creative group and seventeen of the twenty-one interviewees (81%) in the analytical group identified 'language environment' as the most important factor. The numbers of students identifying other factors was comparatively small.

'Effort' was not identified in either of the two groups before the intervention. However, after the intervention, eleven of the sixteen interviewees (69%) in the creative group and fourteen of the twenty-one interviewees (67%) in the analytical group identified 'effort' as the most important factor. The numbers of students identifying other factors was comparatively small.

'Language environment' did not appear in the students' responses in either of two groups after the intervention (see Table 26):

Table 26: Most important factor for successfully learning English in Taiwan

Factor	Creative group (N=16)				Analytical group (N=21)			
	Before intervention		After intervention		Before intervention		After intervention	
Language environment	12	75%	0	0%	17	81%	0	0%
Effort	0	0%	11	69%	0	0%	14	67%
Total	16	100%	16	100%	21	100%	21	100%

The above statistics seem to suggest that the students acknowledged their potential to make a difference to their English learning by putting effort in. In contrast, the students had almost no power to change the language environment in Taiwan. It was possible to reduce the degree of tension from overhauling the importance of this environment because of their acknowledgement of the importance of making an effort. Similar to in this study, the acknowledgement of the value of 'hard work' in learning English as a foreign language is well recognised (Salili, 1996).

(ii) Methods

The term 'method' referred to different things before and after the intervention. In the pre-intervention interview, 'method' was the main approach to English learning in Taiwan. After intervention, it focused on learning methods used in the processes of

essay-writing and generating ideas.

Before the intervention, neither group had a clear awareness of the importance of learning methods. Three of the sixteen interviewees (19%) in the creative group and none of twenty-one interviewees (0%) in the analytical group recognised this importance. After the intervention, eight of the sixteen interviewees (50%) from the creative group but only two of the twenty-one interviewees (10%) from the analytical group valued 'methods' (see Table 27):

Table 27: Importance of methods for successfully learning English in Taiwan

Factor	Creative group (N=16)				Analytical group (N=21)			
	Before intervention		After intervention		Before intervention		After intervention	
Methods	3	19%	8	50%	0	0%	2	10%
Total	16	100%	16	100%	21	100%	21	100%

Despite the different definitions of 'methods', the above different percentages between the two groups suggested a change in the creative group. It seemed that the creative group conveyed the importance of the specific and manageable element of learning methods in successfully learning English in Taiwan. In contrast, the analytical group seemed not to have this awareness.

(iii) Intellectual development

Before the intervention, neither group had a clear awareness of the importance of the intellectual aspect of successfully learning English in Taiwan. Two of the sixteen interviewees (13%) in the creative group and one of the twenty-one interviewees (5%) in the analytical group perceived this importance. After the intervention, both groups identified this importance by their own definitions of intellectual development or the general analytical thinking ability. Eight of the sixteen interviewees (50%) in the creative group and seventeen of the twenty-one interviewees (81%) in the analytical group acknowledged this importance. Greater increased percentages were presented in the analytical group (from 5% to 81%) than that in the creative group (from 13% to 50%).

Also, with the students' own definitions of intellectual development, more students in the analytical group than the creative group acknowledged their improvement in this

development. Eleven out of the twenty-one interviewees (52%) in the analytic group and five out of the sixteen interviewees (31%) in the analytical group acknowledged this. The concept of intellectual development that the students defined was broad and included analytical and creative thinking in both groups. 'Thinking ability', 'idea production', 'diverse thinking' and 'creativity' were used by both groups when the interviewees defined the intellectual aspect.

The above statistics in the aspect of intelligence development are shown in Table 28.

Table 28: Perspectives on intellectual development for successfully learning English in Taiwan

Factor	Creative group				Analytical group			
	Before intervention		After intervention		Before intervention		After intervention	
Indicating the Importance	2	13%	8	50%	1	5%	17	81%
Acknowledgement of improvement	--		5	31%	--		11	52%
Total	16	100%	16	100%	21	100%	21	100%

Conclusion

The above changes might be influenced by asking a similar interview question in both pre-intervention and post-intervention interviews.

The interpretation in this section is different from the discussions in motivation (see 4.2.1) and the relationship between level of pressure, learning attitudes and relevant disciplines, time management and self-study (see 4.2.2). In these two discussions, other factors seem to be often involved. However, the students' perspectives in this discussion seemed likely to be influenced by their learning experience facilitated during this study. Students in their first year of Taiwanese higher education were often required to take many compulsory courses. It was unlikely for them to take another English course with this intervention. The intervention seemed to be the most likely source to provide relevant learning experiences for them to reflect upon how to successfully learn English as a foreign language in Taiwan.

Specifically, the above part of intellectual development explicitly shared the highlighted area of thinking in creative and analytical teaching approaches. These two teaching

approaches also provide the sensible interpretation for factors of successfully learning English in Taiwan and the importance of methods. It seemed difficult to think of other factors which may cause all the relevant changes.

However, insufficient intervention in this study made these comparisons insubstantial. As the perspectives on creative and essay writing (see 4.2.4), the relevant interpretations are only part of the story.

By this changed perspective from ‘language environment’ to ‘effort’, both groups perceived how to successfully learn English in Taiwan as a more practical approach.

Furthermore, the creative teaching approach might have cultivated the students’ clearer awareness of the value of learning methods in English essay-writing. With this acknowledgement, the ‘effort’ referred to by the creative group was more substantially defined than that by the analytical group.

In contrast, regardless of the different definitions of intellectual aspect, the analytical teaching approach might have the advantage of establishing the students’ clearer awareness of intellectual development by focusing only on analytical thinking. With this awareness, the analytical group might have demonstrated more confidence by acknowledging their intellectual improvement. Including both creative and analytical learning tasks, the creative group might have needed more time and the relevant learning experiences to establish the above awareness and confidence.

Chapter 5 DISCUSSION AND CONCLUSION

This chapter consists of four parts. The first part reflects upon the findings of this study from a holistic perspective. The second part describes the limitation of the knowledge acquired from this study. The third part suggests directions for further studies. The fourth part offers a conclusion to this study.

5.1 HOLISTIC REFLECTIONS

In the light of my teaching and the students' learning experiences during this study, the following insights may be helpful for potential applications of the analytical and creative approaches to teaching English reading and essay-writing among Chinese students.

Firstly, this study explored three important aspects of students' learning English reading and essay-writing but to a very limited extent:

(i) Cultural influence;
(ii) Complexity of learning contexts; and
(iii) Challenge of intellectual development.

(i) Chinese cultural influence

The influences of Chinese culture affected the applications of both analytical and creative teaching approaches. A discrepancy in applying the selected features of problem-solving (i.e. 'Identify Problems', 'Represent and Organise Information' and 'Evaluate solutions', Sternberg and Grigorenko, 2000) in teaching essay-writing was found (see 4.1.1 Lessons for analytical thinking). Another discrepancy was in applying the 'Sell Creative Ideas' feature (Sternberg and Grigorenko, 2000) in teaching creative lessons (see (i-ii-ii) Chinese cultural influence in 4.1.2). From these discrepancies and the remaining problems in applying these two teaching approaches in this study (see conclusion in 4.2.3), it seems that many stories are unfolded about the discrepancy between the theoretical knowledge from the western world and its practice in another cultural population (Elliott and Grigorenko, 2007).

(ii) Complexity of learning contexts

The difficulty of designing lessons for practical intelligence directed the change of the research questions into comparing creative and analytical teaching approaches. However, the contextual influences were explored in this discussion on the importance of time management (see 4.2.2 Level of pressure, learning attitudes, disciplines, time management and self-study). It seemed that facilitating the students' creative and analytical thinking in the classroom scenario inevitably encountered practical problems in their broad learning context.

Taiwanese students' learning experiences had largely been simplified and conditioned by secondary education in order to cope with national testing. In higher education, the students were required to learn in a more complicated context. More freedom, including selecting courses, developing a career, interacting with people within a broad interpersonal network and managing one's own life, was also given to these students. Other contextual aspects besides time management were not investigated in this study. These aspects include healthy living, emotional management, interpersonal relationship, anxiety about their learning outcomes and future career. The students played an active role in producing the learning outcomes. Their learning experience often encompassed aspects beyond the classroom scenario. The problems in the above contextual aspects could potentially influence their learning of creative and analytical thinking.

(iii) Challenge of intellectual development

The intellectual challenge was greater when learning in higher education than in secondary education. This required students to change. This requirement was manifest in this study, particularly in facilitating their analytical thinking in essay-writing (see (ii-ii) Changed perspective on essay-writing in 4.2.4).

Cultivating the students' awareness of the above three aspects seemed not to be emphasised in higher education. Students were unlikely to be aware of the importance of the above three aspects. Without being given the relevant knowledge, the students tended to be vulnerable in both identifying and solving the unexpected problems of these aspects in their journey of learning English reading and essay-writing. Providing adequate knowledge and sensible guidance in these aspects can be helpful for students to avoid the pitfalls along the way to achieving their academic goals of English reading and essay-writing.

Secondly, the students' perspectives on creative and essay-writing were positive in this study, except for the disinclination to engage in intellectual development (see 4.2.4 Perspectives on English writing). It seems the teaching approaches to creative and analytical thinking are worthy of adopting in teaching English reading and essay-writing.

Thirdly, some unique knowledge of the students' learning processes in creative and analytical thinking was explored in this study:

(i) Influence of negative motivation in creative writing (see (i-i-ii) Non-threatening learning environment in 4.1.2);
(ii) Discrepancy between integrating either creative or analytical thinking into essay-writing (see Conclusion in 4.2.3); and
(iii) Comparison between the 'Relaxation' of creative thinking (see (i-i-i) Enjoyment of creative writing in 4.2.1) and the 'Effort-consuming' analytical thinking (see (v) Less intellectual engagement in 4.2.4).

Problems were also explored. In creative lessons, the problems included:

(i) How to select one from many ideas;
(ii) How to counter time constraint;
(iii) How to face competition among peers; and
(iv) How to improve creative assessment.
(v) How to further integrate creative thinking into essay-writing.

In analytical lessons, the problems included:

(i) How to improve participation in group discussion; and
(ii) How to improve the self-evaluation process.

The above knowledge and problems were valuable in terms of how to improve teaching using these two approaches among Chinese students. It was also suggested that curriculum development of creative and analytical thinking in English reading and essay-writing was incomplete and needed to be advanced.

Fourthly, adopting the action research approach, the incompleteness of knowledge was expected in this study. 'Discrepancy', 'problems', 'complexity', 'how to select', 'how to counter, 'how to face' and 'how to improve' in the above discussion, demonstrated this incompleteness. Broadfoot (2000) suggested the strategy of 'problematise' in the research context in order to manifest the unique nature of 'to make the familiar strange' (Broadfoot, 2000, p.375). Likewise, this study is problematised. The relevant knowledge and the possible insights to facilitate students' creative and analytical thinking were explored to a certain degree. With the incomplete knowledge and limited insights of this study, follow-up studies will be valuable in uncovering more relevant evidence, accumulated knowledge and to give a bigger picture.

5.2 LIMITATION

As with any other research approach, there were strengths and limitations of the action research approach. The following sections discuss these strengths and limitations.

5.2.1 Credibility

In contrast to validity that is assessed in scientific studies in the positivistic epistemological stance, Lincoln and Guba (1985) proposed that credibility should be estimated in the naturalistic-interpretative epistemological stance. Lincoln and Guba (1985) also suggested the following two strategies to establish credibility:

(i) Prolonged engagement; and
(ii) Persistent observation

(i) Prolonged engagement

This is a strategy that requires the researcher to be involved sufficiently long enough to 'detect and take account of distortions' (Lincoln and Guba, 1985, p.302) within the researcher and participants (Lincoln and Guba, 1985). Prolonged engagement is:

> …a must if adequate trust and rapport are to emerge. (Lincoln and Guba, 1985, p.303)

The participants disclose more information within a trustworthy relationship (Lincoln

and Guba, 1985). Therefore, researchers are likely to collect more genuine data from them. Furthermore, the researcher has a better understanding of the research context through prolonged engagement (Lincoln and Guba, 1985). The researcher may more appropriately interpret the data from:

- His/her own reflections as a researcher;
- The participants' perspectives; and
- Other data sources within the research context.

The purpose of prolonged engagement is to:

> …render the inquirer open to…the mutual shapers and contextual factors [to absorb information within a research context]. (Lincoln and Guba, 1985, p.304)

In this study, my engagement was across three stages. The length was approximately four months for each stage and, in total, twelve months. The site was primarily an ordinary classroom where the intervention took place. However, I also had access to the entire campus, including the dormitory, cafeteria and libraries. With this accessibility, I could capture a better understanding of the students' study life and the relevant influences upon their learning in the intervention.

(ii) Persistent observation

This is to observe:

> …the characteristics and elements…[that] are most relevant to the [research] problem…(Lincoln and Guba, 1985, p.304)

In this study, persistent observation was exercised in the classroom in order to identify the influences of different teaching approaches. Other than class time, the students' behaviour and attitudes were observed:

- Before the class started;
- During break time;
- While testing;

- Handing in assignments; and
- A short period after the class was dismissed.

However, the credibility established by the above two strategies was weakened in terms of comparing the two groups, due to the limited opportunities for sufficient intervention from stages one to three.

The reasons for the constraint of the intervention were mainly:

- Non-instructional learning activities;
- Prescribed instructional and testing contents;
- Analytical form of the textbook;
- The students' need for being taught more essay-writing than reading in English; and
- The students' need for prioritising the analytical lessons in both groups in essay-writing (see (ii) Constraints in 3.3.7 Intervention).

The nature of these constraints was ethical and from the organisation of university. The change of the constraints was beyond my control as a teacher-researcher. The insufficiency of the intervention remained unsolved from stage one to three.

However, the change in the research question and recatogrisation of the intelligence tasks strengthened the credibility of this study. In the scientific-positivistic research paradigm, the amount of intervention is accumulated in order to increase the reliability. In contrast, the purpose of accumulating intervention during prolonged engagement in this study is to detect 'misinformation' (Lincoln and Guba, 1985, p.301) in order to increase the credibility of observations and thus relevant findings. Recognising the impossibility of including practical intelligence and removing it from this study was helpful in clarifying my observations on the realities which occurred. The recategorisation of intelligence tasks (i.e. thinking in context from practical to analytical intelligence and inner-voice theatre from creative to practical intelligence) sharpened my observation on the thinking exercise actually facilitated among students. These changes were contextually rooted and thus enhanced the credibility of the knowledge obtained in this study.

In contrast to the above limitation in comparing the creative and analytical teaching approaches, the knowledge of similarity in analytical lessons between the two groups was credible. In stage three, more than a half of the intervention in the creative group (51%) and the analytical group (57%) facilitated analytical thinking in essay-writing.[21] These analytical lessons took approximately nineteen hours in the creative group and twenty-one and a half hours in the analytical group. The analytical lessons for essay-writing were planned to be similar in both groups. The observation of the students' responses to these lessons altogether in the two groups was forty and a half hours.

This observation was also similar from stage two to three for the following reasons. (1) The analytical lessons in essay-writing, (2) the length of semester and (3) the prescribed instructional contents of the textbook in these two stages were largely the same. Similar raw data between these two stages were found (see raw data of two groups in (ii) Essay-writing, 4.2.4). Accordingly, the length of engagement and observation accumulated from stage two to three was approximately eighty-one hours (i.e. 6.75 months, 4 weeks per month, 3 hours per week).

5.2.2 Transferability

This study adopted the interpretative-naturalistic epistemological stance, so generalisation was impossible (Lincoln and Guba, 1985) and inappropriate. Instead, Lincoln and Guba (1985) proposed 'transferability' (p.124) to indicate similarities between contexts in order to estimate the application of the knowledge obtained in a study to another context. As mentioned, the researcher in the above epistemological perspective was 'value-bound' (Lincoln and Guba, 1985, p.37) and the knowledge acquired was 'undoubtedly incomplete or erroneous to some degree' (Lincoln and Guba, 1985, p.84). However, the knowledge from this particular research context was unique and possibly shares insights into the evaluation of transferability.

In this study, the following similarities existed between the two participant groups and between these two groups and other freshmen in Taiwan:

- Foreign language learners;

[21] The analytical reading lessons in both groups are ignored because the findings about the group similarities were mainly in the lessons of essay-writing, rather than reading.

- Test culture (from the backwash of national testing);
- Youth culture (i.e. undisciplined and liberal lifestyle and maladjustment to academic demands);
- Large class size; and
- Chinese culture.

The above similarities provided the baseline for group comparisons within a stage and across stages in this study. However, the potential individual differences within a group and the group differences within a stage and across stages in this study should be noted.

The above similarities indicate that the knowledge acquired in this study is transferable to another school context with an awareness of possible difference between two school contexts. The different realities that may be explored with the above contextual similarities and other possible undetected characteristics in another context should be of concern.

5.2.3 Researcher's limitation

In this study, I was a teacher, a designer of the new curriculum and the new test, an observer, an interviewer, a writer of the teacher-researcher diary and a reflective thinker, making non-standardised comparison between two groups. My workload throughout the entire study was tremendous; my energy was also consumed. My familiarity and capacity to teaching and researching were increased from stage one to three. In contrast, my freshness was likely to be decreased by accomplishing the above multiple tasks across three stages. However, this seemed to be the price to pay for prolonged engagement. The energy consumption for an individual action researcher should be appropriately considered in terms of developing the research process into stages.

5.3 FURTHER STUDIES

Throughout experiencing and reflecting the research difficulties during this study, the following suggestions may shed light on further studies.

Firstly, the knowledge obtained from this study was limited by the constraints of this research context. One crucial weakness of this study was the insufficient intervention.

This weakness renders the findings of group comparison, potentially, rather substantially credible. However, it seemed inevitable that the time for developing creative lessons was slim in this research context because of the ethical reasons (see Table 11 and 5.2.1 Credibility). It is worthy of conducting a similar study in another Taiwanese research context without some of the constraints in this study (e.g. prescribed instructional contents, format of multiple-choice testing, interference from on-academic activities). Being given sufficient class time to design the analytical and creative lessons, the knowledge gained by comparing the influences between these two approaches could be more substantial. However, it may not be easy to remove the other constraints of this study. The influence of national testing upon students' learning experiences prior to higher education is unlikely to be changed within the Taiwanese test-driven context. Therefore, prioritising the analytical lessons and teaching essay-writing seemed inevitable.

Secondly, Sternberg (2008) advocated that the value of his Triarchic Theory (1985) was to provide analytical, creative and practical thinking in the domain-general dimension. The teaching approaches to analytical and creative thinking proved to be valuable from the students' perspectives in this study. However, most of the findings in this study were incomplete because of their open-ended nature.

For instance, what other discrepancy is caused by the cultural influences in applying these two teaching approaches? How to integrate the unselected analytical and creative intelligence features in teaching essay-writing? Specifically, how to resolve the remaining problems in this study in order to facilitate the selected intelligence features (i.e. 'Identify Problems', 'Organise and Present Information' and 'Evaluate solutions', Sternberg and Grigorenko, 2000)? Based on the knowledge from this study, the other analytical features (i.e. 'Allocate Resources', 'Formulate Strategies' and 'Monitor Problem-solving Strategies', Sternberg and Grigorenko, 2000) are worthy of investigating in order to accumulate the knowledge into the entire problem-solving cycle.

Furthermore, the assessments of analytical and creative lessons were largely ignored in this study and can be particularly studied.

Nevertheless, unexpected aspects were explored in this study; for instance, less

intellectual engagement in creative writing and analytical thinking. Their follow-up questions can be studied. These questions include: Why students preferred lessons with less intellectual engagement? What effort did students make in their analytical thinking? Why did they not enjoy the 'effort-consumption' in analytical thinking?

Thirdly, along with teaching lessons emphasising analytical and creative thinking, non-academic aspects (e.g. time management in this study) will influence the students learning of these lesson. The relationship between facilitating the students' analytical and creative thinking and other factors in the non-academic aspect were worthy of being investigated. Thus, more holistic and therefore more meaningful information for the above facilitation can be provided.

5.4 CONCLUSION

This study started with an attempt to apply the Triarchic Theory of Intelligence (Sternberg, 1985) in teaching English reading and writing in a stage one study and ended by comparing creative and analytical teaching approaches in the third trial.

With the weakness of insufficient intervention, group differences in the creative and analytical teaching approaches were sketched. On the part of my teaching, there was discrepancy of applying analytical and creative intelligence features (Sternberg and Grigorenko, 2000) in teaching Chinese students. Strategies to resolve this discrepancy and other strategies to facilitate students' creative and analytical thinking were developed (see 4.1.1 Lessons for analytical thinking; 4.1.2 Lessons for creative thinking).

On the part of students' learning, the findings are as follows:

(i) Creative writing seems to have the potential to increase students' motivation in learning English writing but the maintenance of this motivation needs to be further investigated (see 4.2.1 Motivation). In contrast, the sense of accomplishment was the source of students' motivation in essay-writing, which seemed more substantial (see 4.2.4 Perspectives on English writing).

(ii) The analytical group had an advantage of target learning during the time for

self-study. This advantage seemed to reduce learning pressure from poor time management and to facilitate better learning attitudes, disciplines and the academic performance, including the language test, in the analytical group (see 4.2.2 Level of pressure, learning attitudes, disciplines, time management and self-study). In contrast, the creative group had no such advantage in facing the intellectual challenge of essay-writing and additional learning of creative writing.

(iii) Students' learning in essay-writing was more substantial than in creative writing, in terms of successive performances and achieving the baselines (see 4.2.3 Achievement).

(iv) Both creative and analytical teaching approaches seemed to introduce a positive perspective on English writing to students (see 4.2.4 Perspectives on English writing).

(v) Students' changed perspective on essay-writing in both groups and the disinclination to engage intellectually found in both creative writing and essay-writing seemed to point to the influence of rote learning from students' secondary English education (see 4.2.4 Perspectives on English writing).

(vi) Other perspectives on creative writing were more in the context of personal development. In contrast, the other perspectives on essay-writing were more practical in terms of meeting the intellectual demands of higher education (see 4.2.4 Perspectives on English writing).

(vii) Both teaching approaches may influence students' perspectives on successful learning English in Taiwan from 'language environment' to 'effort'. The creative teaching approach may have established students' clearer awareness of the importance of methods and thus better defined the 'effort'. In contrast, the analytical intelligence may have established their clearer awareness of intellectual development and more confidence to acknowledge this development (see 4.2.5 Perspectives on successfully learning English in Taiwan).

Along with the above findings, other findings were:

- Discrepancy of applying the Triarchic Theory of Intelligence (Sternberg, 1985) in the subject of English reading and writing (see 4.1 Theory into

practice);

- Importance of classroom management in teaching (see 3.4.1.5 Data analysis and findings of stage one); and
- Importance of time management in students' learning (see 4.2.4 Level of pressure, learning attitudes and relevant disciplines, time management and self-study).

Nevertheless, through the action research approach, the difficulty of adopting curricular examples and the difficulty of categorising instructional tasks into types of intelligence were explored. The constraints of intervention were discovered. The quality of my teaching and researching improved. The self-reflection was exercised through the entire process and often caused changes in this study. These changes included redefining the research questions and utilising different approaches, principles and techniques in data collection, analysis and synthesis (see 3.4.3.7 Overall reflection and summary).

In conclusion, the cultural and contextual influences of applying analytical and creative teaching approaches in English reading and writing within a Taiwanese university were sketched out in this study. As Coffield and Edwards (2009) addressed:

> …we need to face up to the complexities involved in deciding not only what is 'excellent practice' but also working through all the stages which would be needed to transmit it throughout the [school] sector. (p.371)

The incomplete knowledge and limited insights of this study (see 5.1 Holistic reflections) seemed to provide meaningful and useful information as suggested.

Bibliography

Note:

1. For practical reason, the romanisation system of Hunyu Pinyin was adopted in the in-text citation and this bibliography in order to translate the Chinese names of authors into English.
2. In order to identify and present the original information, the English translation of a title of a Chinese article or book was included in the references. If the original author did not provide this translation, the researcher translated the title into English.

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